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A study of faculty inbreeding at eleven land-grant universities

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A study of faculty inbreeding at eleven land-grant universities

Pan, Shouan, Ph.D.

Iowa State University, 1993

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**300 N. Zeeb Rd.
Ann Arbor, MI 48106**

A study of faculty inbreeding at eleven land-grant universities

by

Shouan Pan

A Dissertation Submitted to the
Graduate Faculty in Partial Fulfillment of the
Requirements for the Degree of
DOCTOR OF PHILOSOPHY

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For the Graduate College

Iowa State University
Ames, Iowa

1993

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TABLE OF CONTENTS

	Page
LIST OF TABLES	iv
ACKNOWLEDGMENTS	vii
ABSTRACT.....	viii
CHAPTER I: INTRODUCTION	1
The Problem Statement	4
Significance of the Study	4
Purpose of the Study	9
Research Questions and Hypotheses	10
Definition of Terms	13
Basic Assumptions	16
Organization of the Study	17
CHAPTER II: LITERATURE REVIEW	19
The Current Academic Labor Market	19
Faculty Inbreeding	22
Faculty Inbreeding and Departmental Prestige.....	44
Faculty Inbreeding and Role Orientations	48
Summary	52
CHAPTER III: RESEARCH METHODS AND PROCEDURES	60
The Survey Instrument.....	60
The Research Population.....	62
The Research Sample	64
Data Collection	66

Data Treatment	70
Hypotheses and Statistical Techniques	73
Summary	75
 CHAPTER IV: RESEARCH FINDINGS	 76
Descriptive Analyses of the Data	76
Inferential Analyses of the Data	85
Summary	107
 CHAPTER V: SUMMARY AND DISCUSSION	 113
Summary of the Research	114
Discussion of the Research Results	117
Research Contributions	126
Implications and Recommendations	128
Research Limitations	131
Suggestions for Further Research	131
 REFERENCES	 135
 APPENDIX A. SURVEY INSTRUMENT	 143
APPENDIX B. CONTACT LETTER TO ACADEMIC PROVOSTS AT ELEVEN LAND-GRANT UNIVERSITIES	 153

LIST OF TABLES

	Page
Table 1. A Summary of Research Regarding the Relationships Between Faculty Inbreeding and Various Academic Endeavors	55
Table 2. General Information Regarding the Eleven Land-Grant Universities Under Study	65
Table 3. A Comparison of Research Population and Sample Distribution	67
Table 4. A Breakdown of Responses by Institutions and Academic Disciplines	69
Table 5. A Frequency Distribution of Survey Participants According to the Developmental Stages of Departments, Inbreeding Status, and Years in Service	71
Table 6. The Effect of Faculty Inbreeding on Different Academic Functions as Perceived by Department Chairs at Eleven Land-Grant Universities.....	78
Table 7. A Summary of Reasons Why Departments Hired Their Own Graduates for Tenure-Track Faculty Positions	80
Table 8. A Summary of Responses Towards Selective Faculty Inbreeding	83
Table 9. Factors That Would Serve to Strengthen the Quality of Academic Programs	84
Table 10. Factors That Would Serve to Enhance the Image of Academic Departments.....	86

Table 11. Indicators of How Graduate Students Can Best Prepare for an Academic Career	87
Table 12. Chi-square Analysis of the Extent of Faculty Inbreeding by Department Types	90
Table 13. Chi-square Analysis of the Extent of Faculty Inbreeding by Disciplinary Types	92
Table 14. A Comparison of Acceptance of Selective Inbreeding by Inbred and Non-Inbred Department Chairs When the Demand for High-Quality Faculty Is High	94
Table 15. A Comparison of Acceptance of Selective Inbreeding by Inbred and Non-Inbred Department Chairs When Departments Are Disadvantaged in Their Geographic Locations	96
Table 16. A Comparison of Acceptance of Selective Inbreeding by Inbred and Non-Inbred Department Chairs When Departments Are Disadvantaged in Their Financial Resources	97
Table 17. Means and Standard Deviations for Comparative Measurement of Teaching Productivity by Department Chairs	99
Table 18. Analysis of Variance of Comparative Measurement of Teaching Productivity by Lengths of Service	99
Table 19. Means and Standard Deviations for Comparative Measurement of Research Productivity by Department Chairs	101

Table 20. Analysis of Variance of Comparative Measurement of Research Productivity by Lengths of Service.....	101
Table 21. Means and Standard Deviations for Comparative Measurement of Service Productivity by Department Chairs	103
Table 22. Analysis of Variance of Comparative Measurement of Service Productivity by Lengths of Service.....	103
Table 23. Means and Standard Deviations for Comparative Measurement of Academic Advancement by Department Chairs	104
Table 24. Analysis of Variance of Comparative Measurement of Academic Advancement by Lengths of Service	104
Table 25. Means and Standard Deviations for Comparative Measurement of Cosmopolitan Orientation by Department Chairs	106
Table 26. Analysis of Variance of Comparative Measurement of Cosmopolitan Orientation by Lengths of Service	106
Table 27. Means and Standard Deviations for Comparative Measurement of Local Orientation by Department Chairs	108
Table 28. Analysis of Variance of Comparative Measurement of Local Orientation by Lengths of Service.....	108

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ABSTRACT

In response to the need for further research on faculty selection and promotion decisions, this study examined the most controversial issue involved in such decision-making: faculty inbreeding. Based on an analysis of the conditions of the current academic labor market and an exhaustive review of relevant literature, the study posed this major research question, "Should selective faculty inbreeding have a legitimate place within the system of higher education"?

This study is important because its findings are of value to several higher education constituents: (1) institutional and governmental policy-makers who are interested in preparing for possible upcoming faculty shortages, (2) deans and department chairs who are interested in strengthening the quality of their academic programs and in enhancing the image of their departments, and (3) graduate students who aspire to an academic career.

The data for this study were collected from department chairs at 11 established land-grant universities across the country. A cross-sectional survey instrument was developed and sent to 355 randomly selected participants to solicit their perceptions on a broad array of dependent variables regarding faculty inbreeding. Both descriptive and inferential statistical techniques were employed to test 12 research questions and 11 hypotheses.

The results of the analyses suggested that selective faculty inbreeding be given a rightful place in higher education: Even though significant differences were found in the acceptance of such a practice by inbred and non-inbred department chairs, the majority of them expressed strong support. The extent of

faculty inbreeding varied significantly according to the developmental stages of departments and the types of academic disciplines. Findings from this study also indicated that department chairs with different lengths of service perceived no significant differences in the scholarly productivity, chance for academic advancement, and role orientations of inbred faculty as compared with those of non-inbred faculty.

CHAPTER I

INTRODUCTION

During the past several decades, American higher education managed to survive and progress in the midst of continuous challenges of changing student population, curricular reforms, and recurring financial crises. Today as the twenty-first century approaches, the nation's colleges and universities face another crucial issue--the staffing of the American professoriate.

Just as the success of a business organization depends on its "ability to acquire and maintain resources" (Pfeffer & Slancik, 1978, p. 2), the excellence of higher education institutions relies largely on their ability to recruit and retain the most talented and best qualified faculty. For this reason, the issue of faculty staffing cuts to the core of academic scholarship--the one issue that higher education institutions must address candidly and in a timely manner. This is because a sufficient supply of high-quality faculty has a direct impact on faculty vitality and institutional renewal in the new century.

Under normal circumstances, to replenish the faculty resource is neither a negative prospect nor an impossible task to take on; on the contrary, it is usually a welcomed change for most colleges and universities since it presents an ideal opportunity to infuse "new blood" into the system of higher education. However, a grave challenge presents itself when the flow of willing and able candidates is questionable. Increasingly, faculty staffing has become an urgent issue for colleges and universities across the country because experts have projected significant faculty shortages in many academic disciplines in the next 25 years, beginning as early as the year 1995 (e.g., Bowen & Schuster, 1986; Bowen & Sosa,

1989; El-Khawas, 1990, 1991). A recent publication by Western Interstate Commission for Higher Education (WICHE) considers "the possibility of a shortage in the higher education's greatest resource--its quality faculty" a "cause for significant concern" (1992, p. 3).

According to these recent publications, many administrators have already reported the onset of a faculty shortage, and some have experienced increasing difficulties in recruiting and hiring qualified faculty, particularly in such fields as health sciences, business, engineering, agriculture, and home economics (El-Khawas, 1991; WICHE, 1992). Granted, faculty profile and staffing needs may vary from institution to institution, and the shortage may affect institutions unevenly; however, the hard data gathered through national surveys have caused great concerns for higher education administrators from campus to campus across the nation.

Clearly, the changing academic labor market calls for changes in academic personnel procedures. Many higher education institutions are adopting more flexible academic personnel policies and procedures to address institutional needs. Their strategies range from hiring faculty in advance of actual vacancies, widening the applicant pool to persons from non-academic backgrounds, to employing faculty at salaries well above the normal level. One other institutional initiative--which is more risky and more controversial--is to hire from within.

Derek Bok, the immediate past president of Harvard University, points out in Higher Learning (1986), that a few business faculties have been hiring their own Ph.D.'s to emphasize good teaching and to bring balance to more research-oriented faculty. According to Campus Trends, nearly 50 percent of institutions surveyed have taken steps to encourage their students to consider a faculty career

(El-Khawas, 1990; 1991). More recently, Chronister and Truesdell (1991) have completed a national study of faculty staffing issues that involve 80 institutions of higher education. They find that a number of institutions have developed plans to "grow their own faculty." Although this suggestion relates mostly to candidates from the under-represented groups, it indicates that institutions are making conscientious efforts to maintain and diversify their faculties.

There exists an additional factor that encourages higher education institutions to look among their own graduates for faculty recruits, and that has to do with institutional affirmative action plans and with the changing demographics of the student population. Today, most institutions have set ambitious affirmative action goals that dictate raising the representation of minority and women scholars to a level that can adequately answer the needs of the increasing number of minority and women students attending colleges and universities. And yet, because of the insufficient minority and women scholars in the graduate-school pipeline (National Center for Educational Statistics, 1990; WICHE, 1992), those already in the pipeline have become rare commodities. Naturally, some institutions are considering hiring their own minority and women graduates as faculty before they are recruited elsewhere.

The initiative of hiring one's doctorates as faculty constitutes "faculty inbreeding" -- a term frequently used to describe the general practice of recruiting faculty from graduates of one's own institution. As a faculty recruitment strategy, it has always been in existence at both American and foreign institutions of higher learning. In the United States, however, the practice diminished in the past few decades because inbreeding was attributed many negative characteristics. The projected faculty shortage and the pressing need for the inclusion of more

minority and women in the professoriate may have lent a degree of urgency and legitimacy to the inbreeding practice, but it is still an unsettled issue in academe. Because the debate is far from being over and because the sentiment against inbreeding still permeates the higher education community, administrators are very cautious in hiring graduates of their own institutions (Money, 1989; WICHE, 1992). The recent Premier by WICHE (1992) accurately captures the dilemma confronting many institutions, "A hesitancy to hire their own doctorates and an emphasis on hiring from prestigious institutions also may unnecessarily limit the pool of applicants" (p. 39).

The Problem Statement

The current academic labor conditions have presented a theoretical as well as practical problem concerning faculty staffing in the years ahead. Anticipated faculty shortages and the need to increase minority and women faculty necessitate more flexible hiring practices, and yet, administrators are hesitant to recruit their own graduates for fear of negative reflections of their institutional quality. This is a theoretical problem in that educational researchers have yet to resolve their philosophical differences as to the merits and demerits of faculty inbreeding. It is also a practical problem in that higher education administrators need to be better informed in their policy and administrative decisions to prepare for possible faculty shortages.

Significance of the Study

This researcher has undertaken the present study to examine one of the strenuously debated criteria for faculty selection--faculty inbreeding. It

germinated from a graduate seminar in College Personnel Issues and grew out of this researcher's personal curiosity; but its significance far exceeds the class or the researcher's own interest. Its immediate relevance in both the theoretical and practical sense can be explained in several ways:

First, this research will provide further evidence to test the validity of previous research findings concerning faculty inbreeding. The notion of faculty inbreeding is an old one. It is traceable to the early days of higher education itself, when, for lack of instructors, administrators selected their own students as assistants and apprentices who eventually became faculty members. This practice was rather common at the colonial colleges (Rudolph, 1962). Later at the turn of the twentieth century, Charles W. Eliot (1908), the late president of Harvard University, who was concerned about the prevalence of the inbreeding practice at colleges and universities in general, characterized inbreeding as "natural, but unwise."

Eliot's caveat spurred a great deal of immediate interest in the functions of faculty inbreeding (e.g., Fitzpatrick, 1917; McNeely, 1932; Revees et al., 1933; Ells & Cleveland, 1935 a & 1935 b; Hollingshead, 1938; Wilson, 1942). Since that time, research efforts have been intermittent. In fact, few contemporary researchers have paid much attention to this topic. Available literature shows that there are proponents as well as opponents of inbreeding, but neither camp has succeeded in convincing the other of the good or evil of faculty inbreeding. Even though researchers generally agree to the undesirabilities of inbreeding, for reasons that will be expounded in the following chapter, research findings are inconclusive. In some cases, the ills of the inbreeding practice appear to be more anecdotal than factual (Wyer & Conrad, 1984).

This research will provide additional data to test previous research hypotheses. It has been designed in such a way that it will attempt to address most of the limitations of previous research in the size and diversity of database and in the use of appropriate statistical tools for analyses. Findings generated from this research will also make reasonable generalizations and add to the understanding of the nature and function of faculty inbreeding.

Second, this research will introduce a different method to measure faculty productivity. It appears that the primary objection to faculty inbreeding comes from the assumption that inbred faculty are less productive than non-inbred faculty (McNeely, 1932; Hargens & Farr, 1942). However, previous studies that drew such conclusions are flawed in their fundamental definition of what constitutes scholarly productivity (Wyer & Conrad, 1984; Dattilo, 1986). In their research, the measurement of scholarly productivity consisted exclusively of research productivity such as number of books, articles, and monographs published, and number of citations that appeared in the Social Sciences Citation Index, and the Science Citation Index. This traditional definition excludes teaching and service productivity and fits the long-standing view that recognizes research publication as the most important element of faculty academic activities.

Faculty members, regardless of their institutional origin, are academics who discover new knowledge through research activities, but who also have a responsibility to convey their knowledge to students through teaching and apply their knowledge through public services. Research, teaching, and service together form the threefold scholarly activities that characterize the American professoriate (Martin, 1977; Boyer & Hechinger, 1981; Clark, 1987; Horn, 1987; Nelson, 1987). Ernest Boyer (1991), President of the Carnegie Foundation for the Advancement of

Teaching, calls upon the higher education community to redefine the meaning of scholarship. He urges that equal recognition be given to teaching and service productivity as well as research productivity.

The traditional view of scholarship is unduly restrictive because it fails to give credit to the full range of faculty scholarship. This researcher underscores Boyer's revolutionary view of scholarship and includes in the present study measures of teaching productivity and service productivity. Because of the difficulty in finding direct measures of teaching and service productivity, the researcher created indirect measures by inviting opinions of department chairs. The advantage of this approach is that department chairs, who are usually responsible for faculty's performance review and who have direct access to the necessary information, stand in a unique and legitimate position to objectively appraise faculty's productivity in all three areas. The approach may not be the perfect one, but it offers a new research method to measuring faculty scholarly productivity and thus helping clarify the collective understanding of the inbreeding practice.

Third, this research will provide the latest information on the extent and the patterns of faculty staffing at the nation's land-grant universities. An examination of the literature reveals that there is a paucity in research literature on faculty inbreeding at land-grant institutions. The only study that focused on faculty inbreeding at land-grant universities was conducted by McNeely in 1932. Obviously, his study is outdated because great changes have taken place in many aspects of land-grant universities including the faculty staffing practice over the last 60 years. In addition, his study offers nothing more than a simple frequency compilation of data on the extent of faculty inbreeding and faculty's median

salaries; he paid no attention to other issues of faculty inbreeding. This present study, involving 11 established land-grant universities across the country, is a comprehensive study of faculty inbreeding. Its findings will serve to bridge the gap in our understanding of faculty inbreeding and other related issues at land-grant universities over the past 60 years.

Besides the theoretical value, this study has meaningful contributions to make in the practical sense. As has been noted earlier, contradictory conclusions as to the consequences of inbreeding make it difficult for administrators on campuses across the country to make recruitment decisions. Findings from this research can provide more updated information for various policy discussions by governing boards and for faculty staffing decision making by higher educational administrators. Results from this research will either support or reject the existent claims regarding the positives and negatives of faculty inbreeding.

Further, this research also pertains to issues of affirmative action. Sandler (1974) warns that personnel policies prohibiting the employment of former graduates may be a violation of Executive Order 11246 and Title VII of the Civil Rights Act, though the issue is unclear. The illegality of anti-inbreeding policies has been illustrated by a recent court decree as a result of a sex discrimination suit, which ordered that University of Minnesota waive its policy of not hiring its graduates for tenured positions (Broad, 1980). This present research may generate information that helps to alert administrators to the legal implications of employment decisions concerning women and minority scholars who happen to be alumni.

Finally, in view of the expected faculty shortfall, it behooves higher education institutions to encourage more top graduate students to consider an

academic career. For various reasons, higher education institutions have lost many top-quality scholars to industry and various governmental entities (Bowen & Schuster, 1986; Chronister & Truesdell, 1991). Although recent studies suggest a small increase in both graduate enrollments and in the number of graduate degrees awarded (Syverson & Zhao, 1990), colleges and administrators should continue to encourage more students with potential to consider an academic career. Information gathered from this research will prove valuable to faculty aspirants by way of preparing their graduate program and making wise career choices.

Purpose of the Study

Much of the previous research of faculty inbreeding focuses on delineating the advantages and disadvantages of inbreeding, but for lack of strong and consistent empirical evidence, their conclusions only add to the perplexities of the issue. Rather than to pass more value judgments on the functions and effects of faculty inbreeding, the primary purpose of this research is to bring more certainty and clarity to the relationship between faculty inbreeding and scholarly productivity, faculty academic advancement, faculty role orientations, and departmental reputation.

In addition, the study will devote itself to the following areas of research interest: (1) To determine the extent to which faculty inbreeding exists among the departments of today's land-grant universities; (2) To discover what the prevalent departmental policies are regarding faculty inbreeding; (3) To identify the organizational factors that contribute to the variations in the extent of faculty inbreeding; (4) To characterize the perceptions of department chairs towards

selective faculty inbreeding; (5) To delineate factors that strengthen the quality of academic programs, and (6) To generate career choice information that may be helpful to graduate students who aspire to join the professoriate.

Research Questions and Hypotheses

In accordance to the stated purpose of the study, the following questions were formulated for investigation. The major research question posed is "Should there be a legitimate place for selective faculty inbreeding within the system of higher education"? This major research question is overarching, and its answer has to come from answers to these subsidiary questions:

RQ 1: To what extent does the phenomenon of faculty inbreeding exist among the departments of the 11 land-grant institutions under study?

RQ 2: What are the prevalent policies among departments of the 11 land-grant universities concerning faculty inbreeding?

RQ 3(a): Did any departments offer tenure-track faculty appointments to their own graduates in the last five years?

RQ 3(b): Which candidates would departments hire to fill faculty vacancies when their qualifications are identical?

RQ 4(a): Would departments adopt a different recruitment policy towards faculty inbreeding knowing that severe competitions for a limited number of high-quality candidates lie ahead?

RQ 4(b): Would departments support selective inbreeding if candidates are highly qualified and are from an ethnic minority group?

RQ 4(c): Would departments support selective inbreeding if candidates are highly qualified women?

RQ 5: As perceived by department chairs, what factors would most strengthen the quality of academic programs?

RQ6: As perceived by department chairs, what factors would most enhance the image of academic departments?

RQ7: As perceived by department chairs, how can graduate students best prepare for an academic career?

RQ 8: Are there significant differences in the extent of faculty inbreeding across different organizational types?

RQ 9: Is there a significant difference in the acceptance of selective inbreeding between inbred and non-inbred department chairs?

RQ 10: Are there significant differences in the rating of overall scholarly productivity (of inbred faculty as compared with that of non-inbred faculty) by department chairs with different lengths of service?

RQ 11: Are there significant differences in the rating of academic advancement for inbred faculty as compared with that of non-inbred faculty as perceived by department chairs with different lengths of service?

RQ 12: Are there significant differences in the rating of role orientations of inbred faculty as compared with those of non-inbred faculty as perceived by department chairs with different lengths of service?

To express some of these research questions in testable relationships, the following hypotheses were formulated. These hypotheses served as a guide to conducting this research.

Hypothesis 1: There are significant differences in the extent of faculty inbreeding across different departmental types.

Hypothesis 2: There are significant differences in the extent of faculty inbreeding across different academic disciplines.

Hypothesis 3: There is a significant difference in the acceptance of selective faculty inbreeding by inbred and non-inbred department chairs when the demand for high-quality faculty is high.

Hypothesis 4: There is a significant difference in the acceptance of selective faculty inbreeding by inbred and non-inbred department chairs when departments are disadvantaged in their geographic locations.

Hypothesis 5: There is a significant difference in the acceptance of selective faculty inbreeding by inbred and non-inbred department chairs when the departments are disadvantaged in their financial resources.

Hypothesis 6: There are significant differences in the rating of teaching productivity of inbred faculty as compared with that of non-inbred faculty by department chairs with different lengths of service.

Hypothesis 7: There are significant differences in the rating of research productivity of inbred faculty as compared with that of non-inbred faculty by department chairs with different lengths of service.

Hypothesis 8: There are significant differences in the rating of service productivity of inbred faculty as compared with that of non-inbred faculty by department chairs with different lengths of service.

Hypothesis 9: There are significant differences in the rate of academic advancement of inbred faculty as compared with that of non-inbred faculty by department chairs with different lengths of service.

Hypothesis 10: There are significant differences in the rating of cosmopolitan orientation of inbred faculty as compared with that of non-inbred faculty by department chairs with different lengths of service.

Hypothesis 11: There are significant differences in the rating of local orientation of inbred faculty as compared with that of non-inbred faculty by department chairs with different lengths of service.

Definition of Terms

Faculty inbreeding is not a new term, but there has not been a widely-accepted definition. This may be due to the complexity of the phenomenon or due to the negative implications associated with it. Especially in the academic world, inbreeding frequently carries the stigma of creating parochialism and particularism and endangering institutional vitality (McNeely, 1932; Wilson, 42; Blau, 1973; Bridgeland, 1982). Previous researchers have used a rather narrow definition of inbreeding for purpose of their studies. To paint a complete picture of what inbreeding means in higher education, it will be necessary to briefly examine a few definitions of inbreeding that are frequently quoted in the literature.

In his article on inbreeding, Edward A. Fitzpatrick (1917) distinguishes institutional inbreeding from academic inbreeding. According to him, institutional inbreeding places one's own graduates on the teaching staff within a particular institution while academic inbreeding places only academics as opposed to people outside the university on educational staff within the whole system of higher education. He warns that academic inbreeding, though as

harmful as institutional inbreeding, frequently escapes the attention of university authorities.

McNeely (1932), McGee (1960), and Blau (1973) define inbreeding by academic degrees and adopt an expansive definition of inbreeding. These researchers take into account all degrees earned at an institution to determine the inbreeding status. In other words, a faculty member is considered inbred if he or she has obtained any degree from the same institution employing him or her.

Interestingly, Hollingshead (1938) defines inbreeding as having membership in one of the ingroups: alumni, friendship, or family. In examining the extent of inbreeding of faculty inbreeding at Indiana University during 1885 and 1937, he found that membership in ingroups accounted for four fifths of all faculty appointments, with only a small minority being selected because of professional merit.

To further specify the concept, Caplow and McGee (1958) introduce the factor of employment mobility into the definition of faculty inbreeding. Employment mobility serves to distinguish two types of inbreeding: pure inbreeding versus silver cord inbreeding. The former refers to the group of faculty who are on a university faculty and have never moved since they obtained their final degree. The latter, on the other hand, refers to the group who obtained their final degree from the institution now employing them but have held positions elsewhere before they are called back to their alma mater. Berelson (1960) asserts that this form of inbreeding does not constitute "real" inbreeding because this group of faculty have silver-corded themselves through open competitions.

Perhaps the most popular definition of inbreeding is the one adopted by researchers after the 1950's (e.g., Miller, 1977; Wells, Hassler, & Sellinger, 1979;

Bridgeland; 1980; Wyer & Conrad, 1984). These researchers restrict inbred faculty to only those who obtain their final or terminal degree from the institution. Since an earned terminal degree (usually, Ph.D.'s) is one of the important factors--if not the most important one--involved in today's faculty selection decision, this definition is the most frequently cited one in recent literature.

Researchers operationalize terms and definitions according to their research need. In the present study, this researcher offers the following operational definitions so that important terms and concepts are clarified in the correct context and that they are conducive to understanding the forthcoming discussions.

Faculty: The full-time staff (including professors, associate professors, and instructors) responsible for teaching, research, and service at the universities under study.

Faculty inbreeding: The general practice of recruiting faculty from graduates of one's own institution.

Selective faculty inbreeding: Discretionary recruitment of faculty from one's own graduates based on special needs of an institution and/or on the superior quality of a candidate.

Inbred faculty: Faculty members who obtained their terminal degrees from the institutions currently employing them. Those who graduated from and are currently teaching in the same institutions but who have taught elsewhere or have worked in other institutions or agencies since receiving their terminal degree are not considered inbred faculty in this study.

Research productivity: Broad range of scholarly work that includes specialized and popular writing in the form of journal articles, books, monographs, textbooks, etc.

Teaching productivity: Faculty commitment to teaching excellence exhibited through their expert command over the subject matter and their ability to transmit, transform, and extend integrated knowledge to students by way of carefully planned and continuously revised pedagogical procedures.

Service productivity: Faculty commitment to institutional service, professional service, and public service. Service activities are related to faculty's special academic field and may be carried out through serving on committees, advising students, outside consultation, technical assistance, policy analyses, etc.

Scholarly productivity: The full range of faculty academic endeavors that include the threefold tasks: teaching, research, and service.

Academic advancement: Institutional rewards in the form of promotion in rank, receiving tenure, salary increase, etc.

Professional/Cosmopolitan orientation: An orientation in which an individual faculty member is primarily oriented towards colleagues and research activities in the disciplines outside the institution.

Institutional / Local orientation: An orientation in which an individual faculty member is primarily committed to colleagues and teaching activities within the institution.

Basic Assumptions

This present research is conducted under certain assumptions concerning the validity and reliability of data. Those assumptions are as follows:

(1) It is assumed that department chairs who participated in this study are able to discern the phenomenon of inbreeding.

(2) It is assumed that department chairs who participated in this study have updated and accurate information concerning faculty's productivity, academic advancement, and role orientations, and are able to provide credible assessment of faculty's performance in the measured areas.

(3) It is also assumed that department chairs who participated in this study are free from personal bias towards either inbred or non-inbred faculty in their evaluations.

Organization of the Study

This dissertation consists of five chapters. Chapter I serves as the preamble, which begins the dissertation with a brief discussion of the current academic labor market, problem statement, significance and purpose of the study, research questions and hypotheses, definitions of terms, basic assumptions, and the plan of dissertation organization.

Chapter II provides a thorough examination of the academic labor conditions, historical and current literature review on faculty inbreeding including sub-topics such as the extent and patterns of inbreeding in the U. S and overseas institutions of higher learning, contributions of inbreeding, effects of inbreeding on research productivity, faculty academic advancement, department prestige, and faculty role orientations.

Chapter III is devoted to research methodology and procedures. It contains a discussion of sampling procedures, survey instrument, methods of data collection, and data treatment.

Chapter IV presents the research results. It begins with a summary of general statistical procedures, continues with descriptive and inferential analyses

of the data, and ends with a summary of major research findings. The results of the analyses will lead to acceptance or rejection of each of the hypotheses made in the first chapter. The research questions will also be answered.

Finally, Chapter V ends the dissertation with summaries and conclusions. It summarizes research findings, conclusions, and conclusions, interprets the significance and implications of research findings, discusses limitations, and points out the direction for further research.

CHAPTER II

LITERATURE REVIEW

An examination of the literature provides the necessary theoretical foundation for the research questions and hypotheses posed in Chapter I. The first section of this chapter describes the current academic labor market conditions and their impact on policies of faculty staffing. The second section reviews historic and current studies concerning the effects of faculty inbreeding at both individual and institutional levels, with particular attention given to the relationships between inbreeding and scholarly productivity and between inbreeding and faculty academic advancement. Because of the multiple issues surrounding faculty inbreeding, this section includes several subsections, including an examination of the extent and patterns of faculty inbreeding at US and overseas higher education institutions, liabilities and contributions of faculty inbreeding, the effects of faculty inbreeding, department prestige and inbreeding, faculty role orientations and inbreeding, and finally a summary of the literature review.

The Current Academic Labor Market

The academic labor market has long been of interest to researchers. A constant theme in recent research centers on the imbalance between the supply and demand of faculties for institutions of higher education. Before reviewing the imbalance dilemma in the academic labor market, it will be helpful to briefly examine the factors responsible for the drastic changes in faculty supply and demand over the past several decades.

Like other labor markets, the academic labor market fluctuates as the market law dictates. During the last thirty years, the academic labor market witnessed a drastic change of wax and wane. The wax started in the "golden age" for the American professoriate in the 1960's. That was an era when American higher education experienced the baby boom phenomenon and when enrollment rocketed on most college and university campuses. As a result, a vast army of professors was recruited into higher education institutions. According to a national report, the full-time faculty increased from approximately 154,000 to about 369,000 during the ten years between 1960 and 1970 (National Center for Educational Statistics, 1979). This unprecedented growth, created an unexpected surplus of faculty members. Entering the 1970's, however, American higher education went from a period of expansion to that of depression. During the subsequent years, the number of Ph.D. graduates plummeted; the existing faculty faced diminished opportunities and limited mobility within higher education (Cartter, 1976; Levine & Associates; 1989, Boyer, 1990).

After another decade of relative stability in the academic labor market, the silver lining is showing through the academic gray of the 1990's. The cohorts of faculty hired during the growth years are expected to retire over the next 10 to 15 years (Bowen & Schuster, 1986). This wave of retirement will coincide with a likely increase in student enrollment (Bowen & Schuster, 1986; Bowen & Sosa, 1989). For the first time in years, the American academy is changing from a maintaining mode to a growing mode.

The demand for a net increase in the number of faculty is obvious. And yet, uncertain prospects foreshadow the search for a new generation of scholars to meet the demand. Because of the depressed academic labor market in the 1970's,

higher education institutions continued to experience a drastic decline in the number of graduate students earning doctorate degrees (WICHE, 1992); many of those students who obtained their Ph.D.'s often chose non-academic careers for higher compensation and better advancement opportunities offered by government and business employers (Cartter, 1976; Bowen & Schuster, 1986).

These changes in the academic labor market have serious consequences for the system of higher education, one of which is that the quality of faculty candidates is questionable. In their American professor: A National Resource Imperiled, Bowen and Schuster (1986), after analyzing the faculty resource conditions on the national scene, conclude that the American professoriate as a national resource is in danger. To quote the authors, the quality of faculty aspirants may be "on the verge of serious decline." In Campus Trends, an annual survey of faculty conditions sponsored by the American Council on Education, El-Khawas (1990) reports that 73 percent of higher education administrators in their survey believe that the quality of faculty applicants has declined. As an indication, 63 percent of institutions report to have experienced great problems in attracting top applicants to accept academic positions; 63 percent report that it is taking longer to find qualified candidates for faculty vacancies (p. 3).

The other consequence of the constricted academic labor market of the 1970's is the insufficient number of faculty candidates vis-a-vis the number of faculty position openings in higher education institutions. Bowen and Sosa (1989), using a number of different models that combine projections of supply with those of demand, predict an outright deficit of doctoral recipients available for faculty positions. This shortage begins as early as 1997, with more severe shortages in humanities and social sciences. In specific terms, there will be 1.36 potential

candidates for each faculty opening in all areas of arts and sciences between 1992-1997, and there will be only 0.83 candidate during 1997-2002 period (p. 136).

The problem of faculty shortage is further complicated by the underrepresentation of minorities and women faculty in higher education. The American professoriate has been predominantly, if not solely, white and male. In spite of conscientious efforts to recruit and retain a professoriate representative of the ethnic and gender diversity in the student population it educates, the progress has been unsatisfactory. According to a recent report by the National Council of Educational Statistics (NCES) (1990), in 1987 only 6 percent of full-time faculty in post-secondary institutions are from a minority group. What is worse, the relative proportions of minority doctorate recipients have declined from 5.10 percent of all doctorates conferred in 1979 to 4.30 percent in 1989. The proportions of women in higher education fare better than minorities, but many of them have only part-time appointments.

The literature indicates that the changes in the academic labor market have prompted many institutions to review their faculty staffing policies and procedures. The recent proposal of hiring from within has refueled the traditional debate about the pros and cons of faculty inbreeding. Since this research concerns itself with various issues of faculty inbreeding, it is imperative that relevant historical and current studies on the topic be thoroughly reviewed. It is hoped that this review will help address the research questions raised in Chapter I.

Faculty Inbreeding

Faculty inbreeding has been under criticism for years. Despite ample warnings against inbreeding, the practice has been in existence across time and

national boundaries. It appears that inbreeding is present in all types of institutions--public and private, prestigious and ordinary, small and large (Hollingshead, 1938; Blau, 1973; Bridgeland, 1982). Before discussing the reasons why inbreeding takes place in institutions of higher learning, it may be helpful to examine the pervasiveness of inbreeding in higher education institutions both at home and abroad.

The Extent of Faculty Inbreeding in American Higher Education Institutions

As was pointed out in the previous chapter, inbreeding is not a new invention of modern times. Rather, it is perhaps as old as the academic institution itself. During the nineteenth and twentieth centuries, inbreeding became a popular practice. For instance, by 1910 Harvard University had recruited 64 percent of its faculty from its own graduates (Hargens & Farr, 1973). By 1954, 79 percent of Harvard's faculty holding the rank of associate professors and 88 percent of faculty holding the rank of full professors were its former graduates (Stouffer & Associates, 1954). A study of inbreeding at Indiana University from January 1855 to June 1917 showed that former graduates accounted for 42.89 percent of faculty members (Hollingshead, 1938). In another early study of faculty inbreeding in the United States, Ells and Cleveland (1935) surveyed 17,000 faculty members at 219 universities from over 42 states. They determined that 34 percent of the faculty were inbred; that is, faculty members who had obtained one or more of their degrees from the institutions where they were employed. Findings of this research, thanks to its large sample size, provided historic benchmark data for current studies of faculty inbreeding.

Faculty inbreeding, though diminishing in recent years because of the negative connotations attached to it, still remains alive and well. A recent study of faculty inbreeding on a national level by Lumsden, Stewart, and Linn (1990) provided the most updated information on the extent of inbreeding among contemporary American university professors. This study investigated the academic nativity of 65,682 faculty members at "flagship universities" in 45 states and found an average of 15.40 percent of faculty at the 45 institutions were inbred, ranging from the lowest 2.40 percent at the University of Vermont to the highest 46.40 percent at the University of Wisconsin.

All types of institutions seem to practice inbreeding, but the extent of inbreeding varies. The tendency to inbreed appears to be more prevalent in private than in public institutions, in church-related than in state colleges, in Catholic than in Protestant universities, in men's colleges than in women's, in large than in small universities, and in liberal arts colleges than in land-grant universities (Wilson, 1942; Smythe & Smythe, 1944; Clark & Larson, 1972; Blau, 1973).

The relationship between the extent of faculty inbreeding and the prestige level of an institution has received much attention in the literature (Berelson, 1960; Crane, 1970; Miller, 1977; Arimoto, 1978; Wells, Hassler, & Sellinger, 1979; National Research Council, 1989). Researchers are of the consistent opinion that inbreeding is more common in Ivy League institutions than others. In his Graduate Education in the United States (1960), Berelson states that inbreeding in the elite institutions is "naturally higher since they have been the major producers: the oldest and best universities have had more inbreeding than the others"

(p. 116). Berelson's statement is supported by more recent data. Arimoto (1978) reports the following inbreeding ratio among full-time professors at several prominent universities: Chicago 57.10 percent, Michigan, 44 percent, Harvard 25 percent, Columbia 25 percent, Ohio State University 21.40 percent, and the North Carolina 20 percent. These inbreeding ratios are considerably higher than the 15.40 percent national average reported by Lumsden et al. (1990). The National Research Council (1989) conducted an assessment of doctoral programs, and its findings suggested an inbreeding-dominance at several universities prominent in the disciplines of physics and astronomy. The investigation disclosed that Harvard had twice as many Harvard-trained professors as from any other schools; MIT had five times as many of their own graduates as from other schools; and at California Institute of Technology, the ratio between inbred and non-inbred was as high as 50 percent.

The Extent of Faculty Inbreeding in Overseas Institutions of Higher Learning

The foregoing paragraphs reviewed the extent and patterns of faculty inbreeding in US system of higher education. However, studies by Arimoto (1978), Newman (1985), and Im (1990) indicate that this phenomenon is also a common practice in systems of higher education outside the United States. Granted that different political and sociological factors unique to a country often shape the academic personnel policies for its academic institutions, but an examination of the inbreeding practice at overseas institutions of higher education may help put into proper perspectives the inbreeding phenomenon in American system of higher education.

The Japanese system of higher education, which bears much influence both from American and German systems of higher education, offers useful data for comparative examination. Today's Japanese higher education system is characterized by institutional hierarchy and a high inbreeding ratio, particularly in the renowned imperial and national universities. Like the American system of higher education, the more prestigious a Japanese university is, the higher its inbreeding ratio will be. The Japanese researcher, Arimoto (1978), observes that there is a good rule of thumb by which to gauge the ratio of faculty inbreeding in Japan, which dictates that over 50 percent of associate professors will be inbred about 15 years after the founding of a university. Likewise, about 30 years after, about 30 percent of full professors, and about 50 years after, almost 90 percent of all professors, will be inbred.

Arimoto's rule of thumb seems to predict well for the Japanese system. According to the researcher, the inbreeding ratio is as high as 90 percent in Tokyo and Kyoto Universities--two of the seven imperial universities in Japan. Other universities are not far behind in their inbreeding ratios. In certain disciplines such as law and sociology, the inbreeding ratio ranges from 70 percent to 100 percent.

This excessive inbreeding in the Japanese higher education system, however, is encouraged. First, under a chair system, inbreeding ensures the succession of talented academics and the establishment of fields of specialization. Second, inbred scholars, because of their advantageous position for resources and research opportunities, are highly productive. Except for a few Japanese educators who are concerned about homogeneity and the lack of inter-collegiate mobility as a result of the high extent of inbreeding, the practice persists. When

comparing the inbreeding ratios of the Japanese and American systems of higher education, Arimoto (1978) finds it "striking that the prominent [American] universities such as Harvard, Chicago, Michigan, Berkeley, for example, pursue far less inbreeding than the Japanese major universities" (p. 22). He concludes that the United States has far more academic mobility because its higher education institutions discourage excessive inbreeding.

Similarly, faculty inbreeding is familiar to the Australian higher education institutions. In his study of the staffing patterns at Sydney University in 1973, Saha found 20 percent of his sample of 140 had "perfect inbreeding" in that the faculty members had obtained all their academic degrees from Sydney University, and 33 percent had partial inbreeding in that they had obtained at least one degree from the University at which they were teaching. In more recent research, Newman (1985) investigated staffing patterns in faculties and departments of education at ten Australian universities. Of the 517 faculty members he studied, Newman found 32.50 percent of faculty held a doctoral degree from the same institution employing them. At the University of Melbourne and Queensland, however, inbreeding was more widespread, the ratio reaching 50 percent.

Im (1990) recently completed an investigation of faculty inbreeding in Korean higher education. His study investigated three relationships: the relationship between departmental prestige level and inbreeding, between the academic labor market conditions and inbreeding, and between academic disciplines and inbreeding. His analysis of data collected from all four-year colleges and universities in Korea suggested a high inbreeding ratio in Korean higher education: The proportions of inbred faculty reached 43.90 percent in high prestige departments, 34 percent during the time of steady academic labor market,

and 35.40 percent in the field of social sciences, and 29.50 percent in the field of physical sciences.

It becomes evident from the above literature review that inbreeding as a recruitment tool is not unique to American higher education. On the contrary, it is practiced to a much greater extent in the Japanese, Australian, and Korean higher education systems than in the American higher education system. By American standards, the inbreeding ratios in those countries are perhaps far too excessive, but they serve to mirror the extent and patterns of inbreeding in the United States.

The Liabilities and Contributions of Faculty Inbreeding

Even though faculty inbreeding is associated with generally negative connotations, the foregoing review suggests that it persists in all types of higher education institutions in the United States and many other foreign countries. Caplow and McGee (1958) comment that inbreeding is "commonly disapproved but widely practiced" (p. 41).

It is not difficult to find enough allegations to convince anyone of the undesirabilities of faculty inbreeding. Many believe that the practice is fraught with potential liabilities not only from the standpoint of the individual faculty member but from that of the institution as well. In regard to the individual faculty members, opponents of inbreeding maintain that inbred faculty members are intellectually narrow, scholarly unproductive, and professionally suicidal because "inbreeding permits old attitudes and values to be continuously recycled without ever being re-tested, updated, or possibly, discarded" (Miller, 1977, p. 176).

As for the department or the institution, inbreeding is said to be detrimental to institutional reputation; it stifles institutional vitality because it

stops the infusion of fresh blood and fosters conformity and provincialism. Smythe and Smythe (1944) warn that "inbred faculty members add little or nothing to the growth of the college; rather, they serve to keep it static and hold it back through their complacency" (p. 432).

Given these negative and damaging effects of inbreeding, researchers wonder why inbreeding is still widely practiced when it is generally condemned, and what justifies its continued existence. Many reasons exist that explain the persistence of faculty inbreeding, but it is clear that inbreeding must serve certain positive ends for higher education institutions. McGee (1960) notes that the widespread practice of faculty inbreeding is "not always a dangerous malfunction of the institutional metabolism and may in certain circumstances at least, have utility in an educational institution" (p. 483).

Just as criticisms of inbreeding abound in the literature, a great many researchers sing its praises. Proponents (Lafferty, 1964; Pelz, 1967; Clark & Larson, 1972; Blau, 1973; Blau & Margulis, 1974; Wyer & Conrad, 1984) argue both philosophically and programmatically for the merits of faculty inbreeding. One of the most common arguments is that inbred faculty keep alive institutional traditions.

More than any other organizations, higher education institutions build and thrive on distinct institutional values, cultures, and heritage--the "stuff" that makes up institutional saga. The inbred faculty, in many ways, embody the identity of an institution and provide continuity to its values (Blau, 1973; Wyer & Conrad, 1984). Lafferty (1964) asserts that inbred faculty usually develop strong ties with their institution as a result of their unique experience both as students and as faculty. As a result, this group of faculty can develop "a degree of familiarity with and a

loyalty to institutional policies and goals that can only be acquired over a long period of time by personnel who have been educated elsewhere--a kind of 'instant patriotism' " (Lafferty, 1964, p. 15). Conrad and Wyer (1982) assert that "by drawing on its own strengths, building on its own resources, and defining its own heritage, a healthy 'family' of [inbred] faculty may find the optimal evolutionary path" (p. 45).

Researchers (Conrad & Wyer, 1982; Dattilo, 1986) further argue that the pursuit of faculty inbreeding often informs the public how faculty members are educating their students and why they educate the way they do. As intellectual engineers, faculty know their own products--students; hiring the best graduates as faculty can serve as a strong public statement of confidence in their own product (Conrad & Wyer, 1982). Besides, rather than taking risks associated with hiring outside recruits, however impressive their credentials may be, hiring a known student assures quality and reduces uncertainty (Miller, 1977; Dattilo, 1986).

Wells et al. (1979) use the existence of higher proportions of inbred faculty at high-prestige institutions to counterclaim the commonly held beliefs about inbreeding. The researchers state:

If the quality of faculty has a direct and positive relationship to the overall quality of the institution--as is generally assumed--then exactly the opposite relationship would be expected. That is to say, if inbreeding has detrimental effects on faculty caliber, then one would expect it to be most prevalent in low prestige rather than high-prestige institutions. (p. 24)

Blau (1973) explains in the Organization of Academic Work why elite institutions hire more of their own students. According to Blau, elite institutions recruit their own students not because they do not have the financial means to recruit

elsewhere, but because they believe that their students are prepared by the best institutions. It is unwise to look elsewhere when they have the most qualified candidates in their own departments.

Still further, Brown (1967), Miller (1977) and Conrad & Wyer (1982) suggest that budgetary constraints often explain the use of the inbreeding practice for institutions with limited resources. Higher education administrators like to recruit the best faculty for their institutions, but they can only succeed to the extent to which their budgets allow. With dwindling resources, more and more institutions are caught between the need to increase specialization and the need to save resources. To attract a sufficient pool of qualified candidates in a specialty area becomes a daunting challenge. Particularly for institutions with financial and geographic disadvantages, finding capable and willing candidates is even more challenging. Naturally hiring one's own graduates presents a viable strategy to meet the institutional needs. Institutions can choose their own best students, minimize financial cost, and save time and energy searching for unknown outside graduates.

Finally, it often takes one or more years for faculty members recruited from the outside to feel oriented and become productive because of interruptions in their professional career. On the other hand, inbred faculty members who already know the institution can make a much smoother career transition and put their time and energy to more productive uses (Wyer & Conrad, 1984).

Opponents of inbreeding seem to ground their criticisms on the premises (1) that inbred faculty are less productive because they tend to become complacent and stifled without intellectual challenges (McNeely, 1932; Wilson, 1942), and (2) that the institution's image would be tainted, and that its academic life would

become stagnant for lack of reciprocity of ideas with other institutions (Bridgeland, 1982). These fears may be real, but their logic has been challenged. Abramson (1975) points out the flaw of the premise this way, "the theory is in itself less than sound, for it assumes that graduates are permanently fixed in their thinking by their training" (p. 6). It is obvious that today's mode of information dissemination and structure of most academic disciplines are no longer what they were in Eliot's time. Faculty members, be they inbred or non-inbred, can have quick and complete access to the most up-dated research literature through fax, computers, scholarly journals, and professional conferences. Besides, researchers, be they home-grown or not, interact and cooperate with fellow researchers from other institutions by virtue of their research activities (Dutton, 1980). Professional affiliations and networking cut across institutional boundaries and expand the academic campus. These and many other means of academic exchange greatly alleviate, if not completely offset, the commonly feared dangers of faculty inbreeding (Wyer & Conrad, 1984).

The Effects of Faculty Inbreeding

Research literature regarding faculty inbreeding dates back to 1908, when Charles Eliot, the late Harvard president gave perhaps the earliest and most influential assessment of the inbreeding practice:

It is natural, but not wise, for a college or university to recruit faculties chiefly from its own graduates--natural, because these graduates are well known to the selection authorities, since they have been under observation for years; unwise, because breeding in and in has grave dangers for a university. (p. 90)

Even though President Eliot provided no justifications for the "grave dangers," his reference to inbreeding characterized the sentiments of those researchers who contributed to the early development of research on faculty inbreeding. In the wake of Eliot's warnings, other researchers (Fitzpatrick, 1917; Miller, 1918; Ford, 1928; Smythe & Smythe, 1944) expressed similar monitions of faculty inbreeding; their criticisms, however, were equally vague and impressionistic, rather than substantiated by empirical data. Nevertheless, their objections against inbreeding were so intensified in the early 1900's that the practice assumed its negative connotations that continue to preoccupy present-day educators' attitudes towards inbreeding.

Empirical investigations on faculty inbreeding did not take place until 1932, when the U S Office of Education commissioned McNeely to study the extent and patterns of faculty inbreeding in the nation's land-grant colleges and universities. In his investigation, McNeely surveyed 6,754 faculty members from 149 land-grant institutions. He found that almost one-third of the faculty members were inbred and that the inbreeding ratio varied by academic disciplines, from 44.10 percent for engineering to 21.10 percent for home economics.

In addition to examining the extent of inbreeding, McNeely also gathered information on the compensation for both inbred and non-inbred faculty members. By comparing the median salaries of the two groups of faculty, he discovered that inbred faculty members, with the exception of instructors, received somewhat higher pay than their non-inbred counterparts. Based on his own belief rather than data from his study, he offered this opinion of inbreeding: Inbred faculty members, "having obtained their scholastic training in the institutions employing them, frequently became steeped in the traditions and

practices of their own institutions. As a result, they lack the broad outlook 'necessary to academic achievement' (p. 1).

The major thrust of McNeely's study lies in a nation-wide assessment of the extent and patterns of inbreeding. Its findings are particularly relevant to this present study because they help to illuminate various issues of faculty inbreeding at today's land-grant universities. However, his study leaves room for considerable scrutiny. Even though McNeely offered empirical data on faculty inbreeding at 40 land-grant universities, he erred the same way as other researchers in that his data did not support his assumptions about academic achievement of inbred faculty members. The other flaw in his study comes from his method of statistical analysis. He claimed that inbred faculty earned more than non-inbred faculty, but he did not make any effort to match the inbreds and non-inbreds by their degree attainment or the length of service at the respective institutions. Failure to take into consideration these factors that have much bearing on a faculty's level of compensation invariably renders his conclusions questionable.

Immediately following McNeely, Reeves et al. (1933) found evidence that was at variance with that of McNeely. In their study of faculty staffing patterns at the University of Chicago, the researchers reported that inbred faculty members fared worse both professionally and economically. In terms of faculty salary, their analyses did not confirm McNeely's report that inbred faculty earned more than non-inbred faculty. This finding by Reeves et al. seems to be in agreement with findings of all later studies.

In 1938, Hollingshead studied faculty compositions at Indiana University and found a high degree of inbreeding. While his and other previous studies

contributed to the general understanding of the extent and patterns of faculty inbreeding, it became obvious that research needed to explore the functions and consequences of faculty inbreeding.

In answer to this research need, Ells and Cleveland (1935a, 1935b), undertook the first major study of individual effects of inbreeding. In their study, they included the rate of academic advancement, research productivity, and professional recognition. The researchers matched inbred and non-inbred faculty members from 219 colleges and universities in 42 states with respect to their respective departments, academic ranks, field of teaching, length of service, and gender. After forming 2,036 comparison groups, they examined differences between the inbreds and non-inbreds in the rate of academic achievement, which was measured by frequency of publication, years taken for advancement in rank, and inclusion for recognition in national reference dictionaries such as Who's Who, American Men of Science, and Leaders in Education. In almost every case, the researchers found lower levels of academic achievement for inbred faculty members than for their non-inbred colleagues. Similar to McNeely's earlier study, the extent of inbreeding varied substantially from teaching field to teaching field, even though such a comparison was difficult because the major fields included in the two studies did not match. Ells and Cleveland's findings also provided validation to the conclusions reached in the Chicago study (Reeves et al., 1933) and the Indiana study (Hollingshead, 1938).

The year 1958 saw a turning point in the research of faculty inbreeding. In breaking a long-standing tradition of holding inbreeding in opprobrium, some researchers took an affirmative position towards inbreeding. In Academic Marketplace, Caplow and McGee (1958) contended that perhaps not all types of

inbreeding were harmful to an institution. These two researchers agreed that pure inbreds should be distinguished from the silver-cord faculty who, though currently employed by the same institution from which they obtained their terminal degrees, had seasoned and proven their marketability by finding employment elsewhere before coming back to their alma mater. Consequently, this form of inbreeding might be advantageous to an institution.

In the same vein, McGee (1960) and Berelson (1960), suggested that there might be functional reasons for the continued existence of inbreeding in academe even "in the face of odium" (McGee, 1960, p. 483). In his study of faculty inbreeding at the University of Texas, McGee hypothesized that institutions with financial and geographical disadvantages often had to appoint their own students to junior faculty positions to save resources for equitable competition in the national academic labor market. Resources could be saved this way because the institution's own graduates were more likely to settle for less pay and poorer working conditions. This practice may be considered discriminatory against inbred faculty members because the recruiting authorities were "rob[bing] Peter to pay Paul," but maybe it was a practical way for the institution in financial distress to secure the faculty resource.

To test his hypothesis, McGee compared the inbred with non-inbred faculty in nine academic-related factors, such as academic work, class load, professional productivity, research grants, citations in national reference work, etc. The comparative analysis led him to two important findings: (1) Inbred faculty had higher levels of scholarly productivity, and yet (2) they had lower ranks, heavier class loads, and longer periods before being promoted. On the basis of these

findings, McGee concluded that the university had systematically discriminated against the inbred faculty members.

McGee's conclusions were at odds with those of earlier studies. His untraditional claim was challenged shortly after the publication of the research. Criticizing the shortcomings of McGee's study, Gold and Lieberman (1961) argued that McGee's study was flawed in the statistical technique that he used for data analysis. According to Gold and Lieberman, to determine whether academic nativity was associated with institutional rewards after the effects of scholarly productivity was controlled required a multivariate analysis. McGee, however, used zero-order associations in his analyses. This statistical tool was primarily appropriate for descriptive studies but not for studies involving causal relationships. For this reason, Gold and Lieberman challenged McGee's claim that inbred faculty were discriminated against. Their opinion, though pointed specifically at McGee's study, was equally relevant for most of the earlier studies of faculty inbreeding.

As a reply, McGee conducted a second analysis of his original data, in which he added the origin of the highest degree and job factors. His re-examination led him to conclude once again that inbred Texas faculty were more productive than faculty recruited from the outside. On 8 of the 10 job-factor-degree combinations, McGee reconfirmed his earlier conclusion that inbred faculty were discriminated against despite the evidence that they might be of higher quality than non-inbred faculty (p. 58). McGee, however, did not really address Gold and Lieberman's concerns with the inappropriate statistical tools he used for analysis. For this reason, the question of discrimination against inbred faculty remained unresolved.

Berelson (1960) also held a positive stance towards inbreeding; but unlike McGee, Berelson focused his investigation on the functions of inbreeding at elite institutions. While giving support to Caplow's and McGee's arguments, Berelson contended that inbred faculty members, particularly the silver-corded inbred faculty members, might have beneficial functions especially for prominent institutions. He saw inbreeding as the primary method for elite institutions to assure themselves a continued supply of expert scholars (1960, pp. 115-116).

While McGee's study is criticized for use of inappropriate statistical technique, Berelson's study is noted for lack of empirical evidence to support his claims. The speculations of both McGee and Berelson, though novel, had to wait for further validation by the Clark and Larson study (1972) and the Hargens and Farr study (1973).

Clark and Larson (1972) undertook a comparative study of faculty members at 10 small state and 10 church-related colleges. They were interested in finding out whether there was a difference in the level of research productivity between faculty members from the two populations. Though the difference in research productivity between inbred and non-inbred faculty members was not one of the originally hypothesized relationships, the researchers had data to conduct a supplemental analysis pertaining to the issue. Data from 5 of the 10 church-related colleges suggested that 75 percent of the inbred professors were productive and 70 percent of the non-inbred professors were productive. Thus, they concluded that there was little evidence to support the traditional claim that inbred faculty were less productive than non-inbred faculty.

The year after the Clark and Larson study, Hargens and Farr (1973) completed a well-designed study to specifically test the hypotheses advanced by

McGee and Lieberman. Using data from a random sample of 1,165 faculty members in the fields of mathematics, experimental biology, physics and chemistry, Hargens and Farr concentrated on two issues related to the effects of inbreeding. First, upon examining the relationship between inbreeding and research productivity after controlling for several co-variables, they found a slightly negative relationship between the inbred status and various measures of scholarly productivity; however, the coefficient was too small to make the relationship significant. Like Clark and Larson, Hargens and Farr determined that there was "no evidence to suggest that academic inbreeding has any particular independent relationship with scientific productivity when departmental prestige and years of Ph.D.'s are included in the analysis" (p. 1389). Second, they considered the relationship between the inbreeding status and allocation of institutional rewards and faculty promotion. They found that among all scientists promoted at their first-job institutions, inbred faculty were promoted at a significantly slower rate than non-inbred scientists. These findings lent support to McGee's hypothesis that inbred scholars were discriminated against in the allocation of institutional rewards.

While researchers try to prove or disapprove the effects of inbreeding on faculty productivity, Wells et al. (1979) took a different approach to investigating the relationship. In their empirical investigation of faculty inbreeding in social work education, the researchers considered the effects of inbreeding on both institutions and individual faculty members. From institutions listed in the 1975 Council on Social Work Education, Wells et al. identified 1,729 faculty members from 49 graduate social work programs. For each of the faculty members sampled for study, they collected information regarding their research productivity,

measures of department prestige, and teaching quality. Prestige data were gathered from the 1974 Blau-Marquiles Rankings of Professional Schools of Social Work; research productivity was measured via the frequency of faculty members' name appearing in the Social Science Citation Index for 1975, and the numbers of articles published for the specific period; professional activity was assessed by faculty members' participation in the Council of Social Work Education 1975 Annual Program meeting; and finally, teaching quality was measured by student-faculty ratios. The researchers believed that high teaching quality ought to be reflected by a low faculty-student ratio.

With this information, Wells et al. (1979) established two null hypotheses: (1) There is no relationship between the proportions of inbred faculty of a school and the school's prestige and professional productivity; and (2) There is no relationship between faculty members' institutional origin and their research productivity. In analyzing the data, the researchers used both zero-order association and multivariate statistical techniques; they found identical results that supported their null hypotheses. As a result, they came to the conclusion that academic nativity had no direct relationship to institutional reputation, or faculty's research productivity, or teaching quality.

Viewed as whole, Wells et al.'s study strongly suggested that the relationship, if any, between inbreeding and various academic variables was complex. Where a faculty obtained his or her degree should not be a primary factor in faculty recruitment decisions, in either a positive or negative sense; instead, the other desirable qualities of candidates should be emphasized (Wells, et al., 1979, p. 27). In passing, it may be worthwhile to note that this was the first study that included teaching as a relevant measure of faculty productivity, even

though it was questionable whether faculty-student ratio was the most viable measure of teaching quality.

Entering the 1980's, evidence of interest in studying faculty inbreeding dwindles. Neither the type of enthusiasm nor the amount of research efforts on the topic was as high as in the previous decades. There may be many reasons for this change in research interest, but clearly the understanding of the relationship between faculty inbreeding and other academic endeavors is still too sporadic and inadequate to allow meaningful theorization. The positive change was that the few investigations completed after the 1970's had greatly improved in research design, statistical analyses, and generalizability. Besides, as a continuation of research tradition of the early 1960's, recent research reported favorable findings regarding the inbreeding practice.

One of such investigations was completed by Jean C. Wyer in 1980. Taking data from the 1977 Survey of the American Professoriate, Wyer tested relationships between gender and institutional origin to productivity among many other hypotheses. To overcome shortcomings of previous research, she included in her study a broad operationalization of academic productivity, use of multivariate analysis, and a test for statistical significance of discrimination in rewards. Findings of her study suggested that inbred faculty, inbred women faculty in particular, were discriminated against in institutional rewards. It took longer for inbred women faculty she sampled to receive promotion to the rank of associate professor than non-inbred women, even though the level of productivity was comparable. In agreement with Wells et al., Wyer found institutional origin to be an unreliable indicator of faculty productivity. For this reason, she called for

the abandonment of inbreeding as a signal in the academic labor market, particularly in making decisions related to faculty promotion and retention.

The database used in the Wyer study (1980) encompassed 160 institutions and included faculty from almost all major academic disciplines. The researcher considered participants to be inbred if they had earned their terminal degree from the institution at which they were teaching. Because of the size of the sample, findings of the study permit an extent of generalizability that had not been possible in previous research except the Ells and Cleveland studies (1935a; 1935b).

This same set of data was used again in a study of faculty inbreeding in 1984 by Wyer and Conrad. This time the researchers focused their interest on examining the relationship between institutional origin and scholarly productivity and institutional rewards. Of special interest to this review of literature, the researchers included measures of teaching and service in evaluating faculty members' scholarly productivity. Research productivity included lifetime production of research articles, books, monographs, and procurement of research grants; teaching productivity was measured via weekly number of hours spent on scheduled classroom teaching and unscheduled preparation for teaching; and service productivity was assessed through the number of hours per week spent on administrative duties, advising and counseling students, and outside consultation activities.

Research results of this study supported as well as refuted several notions about faculty inbreeding. First, findings from this study upheld several previous researchers' claim (McGee, 1960; Wells et al., 1979; Wyer, 1980) that inbred faculty were discriminated against in institutional rewards. Second, contrary to many of the previous research findings before McGee's time (1960), Wyer and Conrad

found inbred and non-inbred faculty to be equally productive when the analysis was based on zero-order association; but when an adjustment was made for the confounding effects of time allocation, inbred faculty were found to be more productive in all areas of scholarly productivity. Given the evidence, the researchers asserted that the inbred faculty were not of smaller intellectual caliber or scholarly less productive than their non-inbred counterparts. And they argued that inbred faculty as a special group had much to contribute to institutional growth and vitality.

One other recent research on the effects of inbreeding investigated the difference in scholarly productivity between inbred and non-inbred full-time doctorally prepared nursing faculty. Researcher Joellen Dattilo (1986) randomly sampled 607 nursing faculty from 41 institutions of higher education in the southern region. To determine scholarly productivity, the researcher selected seven variables including number of journal publications, number of refereed publications, frequency of citations, etc. Using multivariate analysis, she found no significant differences in scholarly productivity between inbred and non-inbred full-time nursing faculty. Consequently, she argued that traditional beliefs about productivity of inbred faculty were a misconception. She pointed out that it was time for a reassessment of the traditional charges against faculty inbreeding.

In summary, the above section has reviewed major historic and contemporary research literature on faculty inbreeding. The review suggests that previous studies have primarily focused on the extent and patterns of faculty inbreeding and its effects on the institutional reputation and scholarly productivity, institutional rewards, and professional advancement of inbred faculty members. In general, some researchers before the 1950's are of the

position that inbreeding is dysfunctional for both the individual and the institution, and yet they do not have sufficient empirical data to support their claims (Fitzpatrick, 1917; Miller, 1918; Ford, 1928; Smythe & Smythe, 1944). Other researchers conducted quantitative studies and reported lower productivity levels, lower salary, and less professional recognition for inbred faculty members (Ells & Cleveland, 1935). Research after the 1960's challenges the claims after finding either an equal level of scholarly productivity between the inbred and non-inbred faculty (Clark & Larson, 1972; Hargens & Farr, 1973; Wells et al., 1979; Dattilo, 1986) or greater level of productivity for inbred faculty (McGee, 1960; Wyer, 1980; Wyer & Conrad, 1984).

Studies after the 1960's, with the exception of the McGee study (1960), employed multivariate analyses to explore the relationships between inbreeding and variables related to educational processes and found the relationships to be complex. The researchers have suggested that inbreeding is no longer a relevant signal for faculty selection and faculty rewards because research findings from 1920's to 1980's have been contradictory and inconclusive. Assertions about faculty inbreeding, either for or against, have to withstand further empirical scrutiny before they are taken as truth.

Faculty Inbreeding and Departmental Prestige

Academic departments, like other organizations, are deeply concerned about their reputation to the inside constituents as well as to the general public. How well an academic department is perceived often decides the type and number of students and faculty it attracts and retains, the amount of private and public funding it generates, and the degree of its centrality to the institution. In

certain circumstances, a department's reputation may decide its longevity in the academic world that is full of intense competitions and financial crises. In the entire system of higher education, there is also a hierarchy of departmental prestige. Each department has a prestige rank relative to other departments, and all of them exert much effort to upgrade their status. William M. Bridgeland (1982) observes that higher education institutions are unlikely to get out of image building because there is much at stake.

Prestige is a sociological concept. It refers to a form of perceived social power, operating somewhat independently of political power and momentary compensation. According to Smelser and Content (1980), prestige should be regarded as the principal operative currency in the academic marketplace. Hagstrom (1971) applies the sociological concept of prestige to academic departments and investigates factors that correlate with department prestige. Using a sample of 125 science departments of a university, Hagstrom identified a host of factors that had a significant bearing on departmental prestige: department size, research and accomplishment opportunities, student characteristics, faculty background, faculty awards, and public services. Included in faculty background was the quality of Ph.D. granting university and ratio of inbreeding. Multiple linear regression analyses showed that combinations of six to nine factors explain about three-fourths of the variance in department prestige.

In recent literature, much has been written about the effect of the doctoral origin on the prestige of the institution and career mobility of the graduates (Caplow & McGee, 1958; Berelson, 1960; Hargens & Hagstrom, 1967), but few studies specifically investigate the interplay between inbreeding and department prestige. The countable few studies that focus on this relationship suggest

inconsistent findings. Peter Blau (1973) investigated the effects of inbreeding on the quality of academic faculty. Based on data collected from 115 four-year liberal arts colleges and universities, Blau reported a reverse relationship between the inbreeding ratio of an institution and its ability to attract high-quality faculty. Specifically, the greater the tendency toward faculty inbreeding, the less the chance to recruit well-known faculty. This research further reported that inbreeding was negatively correlated with an institution's reputation, the qualifications of its faculty, and research productivity.

An investigation completed by Bridgeland (1982) gave similar warnings. The researcher surveyed department heads of large universities to solicit their perceptions about faculty inbreeding and department image. Using the responses from his sample, the researcher warned that hiring even a few of one's own graduates was definitely detrimental to the reputation of a department that had any ambitions. If a department was particularly upwardly mobile and aspired to national reputation, it would be foolish to hire from among its own graduates--an action that was usually perceived as harmful to departmental reputation.

All departments are not at the same developmental stage. According to Mitchell and Wheeler (1987), departments find themselves roughly in three different stages, namely, regressing stage, maintaining stage, and actualizing stage. The findings from Bridgeland's study (1982) suggest that the extent of inbreeding may be related to the stage of development in which a department finds itself. A higher rate of inbreeding would occur in departments at the regressing stage than it would be in departments at maintaining or actualizing stages; similarly, more inbreeding would be expected from departments at the maintaining stage than from those in the actualizing stage. It follows that

actualizing departments that are growing in resources and image would attract more faculty members with superior qualifications. They do not want to jeopardize their reputation by hiring from within. In the meantime, regressing departments that face limited resources or an uncertain future cannot lure as many outstanding scholars. Instead, these departments turn to their own graduates for faulty recruits. They hire more inbred faculty out of necessity, or because they can afford to worry less about the traditional inbreeding constraint. What is implied here is that inbred faculty are "less marketable" and that they contribute less to the prestige of an academic department.

However, there are also researchers who hold different viewpoints on the dynamics of inbreeding and departmental prestige. As is suggested in the previous section of literature review, top universities hire more of their own graduates than other institutions (Caplow & McGee, 1958; Berelson, 1960; Arimoto, 1978; Wells et al., 1979). The Berelson study (1960) in particular, shows that prominent universities have large proportions of inbred faculty. In his study, Berelson clearly implies that inbreeding actually helps maintain high quality.

Not as a coincidence, Massengale and Sage (1982) found a positive relationship between the rate of inbreeding and departmental prestige. After examining 795 doctoral faculty in 58 most prestigious departments of physical education, the researchers concluded that "the higher the prestige of a department, the greater the inbreeding of faculty, and the more tightly closed is the door of opportunity to non alumni" (p. 310).

Following the model of the Massengale and Sage study, Im (1990) investigated a total of 101 departments in six fields of social and physical sciences at four-year Korean higher education institutions. His analysis of the relationship

between the inbreeding ratio and the level of departmental prestige led him to the finding that inbreeding rate in prestigious departments was significantly higher than in less prestigious departments. Im did not specifically measure the strength of the association between inbreeding and departmental prestige; however, he concluded that inbreeding positively contributed to the prestige of a department.

The literature review in this section has made it clear that researchers believe that the extent of inbreeding and departmental prestige interact in a dynamic relationship, but they differ as to the direction of their association just as they do on the relationship between inbreeding and scholarly productivity. Some researchers believe that inbreeding correlates negatively with departmental prestige and that low prestige departments practice more inbreeding; some believe the opposite. For lack of general consensus, it is perhaps prudent to recognize that the relationship between inbreeding and departmental prestige is multidimensional and that it warrants further study.

Faculty Inbreeding and Role Orientations

One recent development in the research of higher education organizations is the growing interest in studying the different role orientations among faculty members with the purpose of strengthening institutional commitment and promoting excellence in teaching, research, and service. Much of this research has focused on faculty role orientations as they perform the traditional three-fold tasks of American higher education. From these studies two distinct role orientations have been identified and differentiated--the professional or cosmopolitan orientation versus the institutional or local orientation (Surbramanian, 1988).

The eminent sociologist, Robert Merton (1957) first used the term "cosmopolitans" and "locals" to address criteria for classifying community leaders in unofficial roles rather than formal organizational roles. According to Merton, "locals" are individuals whose primary orientation and interest are limited to the local community whereas "cosmopolitans" are individuals who are oriented primarily towards people outside the local community. Alvin Gouldner (1957) applies Merton's concepts to the study of social role identities in academic organizations. He believes that faculty members have latent organizational roles that influence their orientation towards academic work. Some faculty members are locals, who have "higher organizational loyalty, low commitments to specialized skills, and the use of an inner reference group orientation" (p. 290). Some faculty members are cosmopolitans who have "low organizational loyalty, high commitment to specialized skills, and use of an outer reference group orientation" (p. 290).

Peter Blau (1973) further expands on Gouldner's conceptualization of faculty orientation by describing how faculty in the two contrasting orientations approach the tasks of teaching, research, and service. Blau believes that locally-oriented faculty are committed to the institution and emphasize the activities of teaching and service in their academic work. On the other hand, the cosmopolitans are committed to the specific discipline for which they are trained; they are inter-institutionally active, and they stress research and publication. On the basis of this belief, he hypothesizes that the characteristics of faculty members have opposite effects on their own and other faculty members' commitment to their employing institution.

Blau (1973) lists several faculty characteristics that promote a certain type of orientation in faculty members, and one of the characteristics is the institutional origin. After examining the relationship between inbreeding and faculty orientation, he contends that inbreeding promotes faculty identification with and loyalty to the institution whereas non-inbreeding fosters identification with and allegiance to their profession (p. 14). Inbred faculty members then are usually the "locals" who are devoted to teaching and working with undergraduate students, but who are less inclined to network with professionals outside the institution and less interested in producing scholarly publications. But paradoxically, these faculty members, though strongly committed to their institution, diminish the institution's attraction for other faculty members and thus weaken the loyalty of their colleagues to their institution. This is partially because these faculty members are perceived to lack in national recognition.

On the contrary, non-inbred faculty members are usually the "cosmopolitans" who engage themselves in research and in interacting with the wide community of scholars in their discipline, but who pay less attention to teaching and various collegiate services. These faculty members are less committed to their own institution, but at the same time they enhance the allegiance of their fellow faculty to the institution by virtue of their outside recognition. For these reasons, Blau concludes that "a university or college is therefore confronted by the choice of hiring and promoting either faculty members whose scholarly concerns reduce their own commitment to the local institution or those whose lack of research interests makes the institution less appealing to others on the faculty" (p. 274).

Blau's analysis of the dynamic interplay between inbreeding and faculty orientation certainly presents complicate relationships that are worth further investigation. However, his hypothesis regarding the dynamic interplay is challengeable in several aspects. First, though his study is empirical in nature, his proposition about inbreeding and faculty orientation could not be tested because of the nature of the data he collected. Second, faculty orientation is not strictly as dichotomous as suggested by Blau. Just as Surmanian (1988) points out, faculty role orientations often interact and result in mixed orientations. Because of the increased emphasis on teaching, research, and service at many institutions, faculty orientation can hardly remain unchanged. It is probably not difficult at all to identify a great many faculty members who are skilled in balancing different commitments and who can successfully function in different academic worlds. In other words, they can be excellent instructors, productive researchers, and well-accepted public service agents.

Finally, Blau's theory seems to indicate that teaching is inferior to research and that the two functions are inherently exclusive. The flaw with this indication becomes obvious. In an academic institution, teaching and research are not a zero-sum relationship; instead, they are mutually supportive and complementary. They are interdependent because teaching is an important vehicle through which research results and new findings are disseminated, while research results inform teaching. Research gives substance to teaching, and teaching makes research useful.

Summary

The foregoing literature review consisted of two parts. The first part discussed the current academic labor market conditions and their impact on

faculty staffing. Various models of projections have indicated general faculty shortages in the next several decades. Higher education administrators across the country are greatly concerned about this prospect and are bracing for faculty shortages. As one of the initiatives, a few institutions are considering hiring their own graduates or "growing their own products."

Faculty inbreeding as a recruitment tool, though long in practice, was "something considered taboo by many in the past" (Mooney, 1989, p. A14). The competition for qualified faculty from a limited pool may have given the green light to this practice, but it still begs a perennial question, "Do institutions consider faculty inbreeding because it serves the special need of a desperate time or because it is a sensible thing to do regardless of the circumstances"? To ask the question another way, do institutions hire their own graduates because they are pressed for scholars and particularly minority and women scholars? Or is it because such a practice has certain inherent value and should have a legitimate place within higher education?

Answers to these questions constitute the crux of this dissertation. It is consequential because it has important policy implications for institutions of higher education and for state policy makers. Even though considerable caution needs to be exercised in the use of those projections because the projective trends and figures lack in consistency, researchers (Bowen & Schuster, 1986; Bowen & Sosa, 1989; NCES, 1989; El-Khawas, 1990 & 1991; WICHE, 1992) concede that sufficient evidence suggests serious faculty shortages.

The second part of the literature review provided an overview of major historical research and current research on faculty inbreeding. Being pertinent to the topic of the present study, subtopics were used, which included the extent and

patterns of faculty inbreeding at both the U S and foreign higher education institutions, liabilities and contributions of faculty inbreeding, the effects of faculty inbreeding, the relationship between inbreeding and departmental prestige, between inbreeding and faculty role orientations. Table 1 presents a summary of the major empirical studies that were reviewed in this chapter. Noted in this Table are the dependent variables under study, the comparative results relative to the variable for inbred and non-inbred faculty, the statistical significance for the original hypothesis, the researchers and the years when the research was conducted, and explanatory notes for the findings.

Through this exhaustive literature review, it becomes clear: (1) Though discouraged, faculty inbreeding occurs in all types of institutions and disciplines, and the inbreeding ratio is much higher in prestigious institution than in others. (2) There is a general resistance to excessive faculty inbreeding because it is believed to have grave consequences for academic institutions. On the other hand, faculty inbreeding is also believed to benefit an institution in multiple ways. Today many modern mechanisms serve to alleviate the traditional limitations of inbreeding. (3) The relationship between inbreeding and scholarly productivity is unsettled and ambiguous. As Table 1 shows, except for one study that reports lower productivity for the inbred faculty, all other studies find that inbred faculty have equal or higher levels of scholarly productivity than non-inbred faculty. For this reason, many researchers have called to dismiss faculty's institutional origin as a reliable indicator of their research capability and productivity. (4) Inbred faculty members have been subject to institutional discrimination in forms of monetary rewards and opportunities for academic advancement. (5) Similarly, inbreeding has both negative and positive effects on departmental prestige.

Further studies are necessary to ascertain this relationship. Finally, (6) inbred faculty are considered "locals" who have an institutional orientation and who prefer teaching to research; non-inbred faculty are said to be "cosmopolitans" who have a professional orientation, commitment to research, and outside networking. This viewpoint may be flawed and awaits further research validation.

Table 1

A Summary of Research Regarding the Relationships Between Faculty Inbreeding and Various Academic Endeavors

Dependent Variables	Inbred Faculty Compared to Non-Inbred	Statistical Significance	Researchers (year)	Notes
Research Productivity	Lower	Unknown	Ells & Cleveland ('35)	No. of books published & total publications
	Greater	Yes	McGee ('60)	Productive vs. unproductive
	Equal	No	Clark & Larson ('72)	Self-reported number of books, articles & papers published
	Equal	No	Hargens & Farr ('73)	No. of articles published
	Equal	No	Wells et. al ('79)	Publ.s, citations, & participation in professional activities
	Equal	Yes	Wyer ('80)	Total article & book prod.s
	Greater	Yes	Wyer & Conrad('84)	Research (lifetime publ.s & research grants), teaching (hrs used for teaching), and service (hrs used for admin.)

Table 1 (Continued)

Dependent Variables	Inbred Faculty Compared to Non-Inbred	Statistical Significance	Researchers (year)	Notes
Research Productivity	Equal	No	Dattilo ('86)	No of journal articles, referred publications, citations, & papers presented at conferences
Productivity	Equal	No	Dattilo ('86)	Number of journal articles
Teaching Quality	NA	No	Wells et. al	Extent of inbreeding does not affect the quality of teaching.
	Greater	Yes	McGee	Classroom teaching
Institutional Prestige	NA	No	Wells et. al	Extent of inbreeding does not affect institutional prestige.
	NA	No	Dattilo	Inbred nursing faculty have the same chance to be employed at prestigious institutions.
	NA	No	Berelson ('60)	Inbreeding may help improve institutional quality.
	NA	Yes	Blau ('73)	Inbreeding is negatively related to faculty quality.

Table 1 (Continued)

Dependent Variables	Inbred Faculty Compared to Non-Inbred	Statistical Significance	Researchers (year)	Notes
Institutional Prestige	NA	No	Bridgeland ('82)	Inbreeding is detrimental to departmental prestige.
	NA	Yes	Messengale & Sage ('82)	There is a positive relationship between inbreeding and the reputation of a department.
	NA	Yes	IM ('91)	Inbreeding is significantly higher in more prestige depts.
Rate of Academic Advancement	Faster	Yes	McGee	Only true for junior faculty
	Slower	Unknown	Ells & Cleveland	Length of time taken for promotion in rank
	Slower	Yes	Wyer	Years taken to be promoted in rank and to receive tenure

Table 1 (Continued)

Dependent Variables	Inbred Faculty Compared to Non-Inbred	Statistical Significance	Researchers (year)	Notes
Orientations	Local/Institutional	NA	Gouldner ('57)	High org. loyalty, low commitment to specialized skills, use of inner reference groups
	Local/Institutional	NA	Blau ('73)	Loyalty to inst., interested in teaching rather than research
Professional Recognition	Equal	No	McGee	Membership in learned societies
	Less	Unknown	Reeves et. al ('33)	
	Less	Unknown	Ells & Cleveland	Cited in national ref. books
	Less	No	Hargens & Farr	Number of citations
	Equal	No	Dattilo	Inclusion in the 1985 of Am. Academy of Nursing Directory
Salary	Slightly higher	Unknown	McGee	Median salaries
	Lower	Unknown	Reeves et al.	Median Salaries
	Lower	Yes	Wyer	Average annual income
	Lower	Unknown	Bridgeland	Average annual income

Table 1 (Continued)

Dependent Variables	Inbred Faculty Compared to Non-Inbred	Statistical Significance	Researchers (year)	Notes
Salary	Lower	Yes	Wyer & Conrad	Average annual salaries
Academic rank at Appointment	Lower	Unknown	McNeely	Proportion of faculty by rank
	Lower	Unknown	Hollingshead('38)	Proportion of faculty by rank
	Lower	Yes	McGee	Proportion of faculty by rank
Discrimination Against Inbred Faculty	NA	NA	McGee	Selective and systematic discrimination
	NA	NA	Gold & Lieberman	No sufficient evidence to prove discrimination
	NA	NA	Hargens & Far	Discriminated in the allocation of rewards
	NA	NA	Wyer	Inbred women were discriminated against.
	NA	NA	Wyer & Conrad	Wage discrimination

CHAPTER III

RESEARCH METHODS AND PROCEDURES

The purpose of this chapter is to organize and describe the research methodology employed in carrying out the present study. The chapter describes the procedures used in developing a survey instrument, defining the research population, selecting the research sample, collecting and analyzing the data. The chapter concludes with a summary of the methodology.

The Survey Instrument

In order to fulfill the purposes of this investigation, it was necessary to solicit the perceptions of department chairs towards the variables defined in the previous chapter. Since the department chairs at the 11 land-grant institutions are dispersed over a wide geographic area, responses could best be obtained through a cross-sectional survey.

Using Educational Research by Borg and Gall (1989) as a guide, this researcher developed a draft of the survey instrument. The instrument contains 37 question items grouped under three parts. The first part solicits department chairs' perceptions about the general functions of faculty inbreeding and their acceptance of selective inbreeding. The second part includes two sub-parts: (1) The first sub-part asks the department chairs to compare the scholarly productivity, rate of academic advancement, and role orientations between the inbred and non-inbred faculty; (2) The second sub-part gathers department chairs' viewpoints on factors that strengthen the quality of academic programs, factors that enhance the image of departments, and ways for graduate students to prepare

for an academic career. And the third part of the survey collects background information about the department chairs' length of service and inbreeding status as well as demographic information of departments, academic disciplines, and institutional affiliations.

To ensure the use of clear questions and discriminating response choices, the investigator invited a panel of experts to further evaluate and validate the survey instrument. The panel consisted of a department chairman, two professors of higher education, two professors in educational statistics and measurement, and the Director of Institutional Research at Iowa State University. Each of the panel members received a draft copy of the survey instrument and provided the investigator with feedback for revision.

After incorporating the panel's recommendations into the second draft of the survey instrument, the researcher asked 12 department chairs at Iowa State University to participate in a pilot study. This pretest was initiated approximately one month before the mailing date, and it was carried out to eliminate any ambiguous, sensitive, and difficult questions and to solicit comments for improvement and revision of the instrument. All participants of the pilot study provided valuable suggestions and comments, which were incorporated into the final revision of the survey instrument.

Because the surveys were to be mailed to a target population that was not only busy with administrative duties but also heavily surveyed, they had to be appealing to the participants to attract the highest rate of responses. To achieve this end, the investigator consulted his major advisor and his statistical advisor and decided to have the questionnaire professionally printed and returned to the Research Institute of Studies in Education (RISE) at Iowa State University instead

of a private home address. The instrument was printed in the format of a seven-page booklet, and it took an average of 15 minutes to complete. Finally, the transmittal letter was typed on the official stationery of Professional Studies Department and co-signed by the department chairman. All these efforts were made to add credibility and prestige to the research project. A copy of the survey instrument is included in Appendix A.

Before the investigator sent out the surveys, he consulted his statistical advisor regarding the reliability and validity of the instrument. After examining each of the questions in the instrument, it was decided that there was minimal threat to reliability and validity because sensitive and confusing items had been revised and removed. In addition, comments from the participants of the pilot study had been used to improve the content and face validity of the survey items.

The Research Population

Since this research concerns itself with faculty inbreeding at land-grant universities, it draws its research population from Peer Eleven land-grant universities in the country. The 11 institutions include Iowa State University (ISU) and 10 other public land-grant universities that are selected by ISU's Board of Regents as peers: University of Arizona, University of California--Davis, University of Illinois at Urbana-Champaign, Michigan State University, University of Minnesota, North Carolina State University, the Ohio State University, Purdue University, Texas A & M University, and University of Wisconsin-Madison. These universities are comparable in their institutional missions, scope of degree programs, and yearly numbers of doctoral degrees granted except that the size of faculty and student enrollments vary. According to the Carnegie classification of

higher education institutions (1987), all of them are Pure Research Universities I, except Iowa State University being Pure Research University II. Obviously, all these 11 institutions under study are public state institutions in the 11 states. Geographically, these institutions represent many different regions of the United States from South West to South East, with most of them located in the Middle West region.

Unlike other studies of faculty inbreeding, which generally collect information directly from faculty members, this study obtains from department chairs various measures of academic endeavors of inbred faculty at the 11 land-grant universities. This approach was taken because the researcher believes that the department chairs are able to provide information on inbred faculty's performance in teaching and service areas, which would not be readily available through other methods. The target population for this study then consists of all department chairs in the 11 land-grant universities.

The researcher sent out contact letters to the academic provost's office of each institution in early April 1992 (see Appendix B) to obtain three items of information: (1) a list of names and addresses of all current department chairs, (2) percentages of inbred faculty members at each institution, and (3) an indication whether each institution has a formal or informal institutional policy regarding hiring one's own graduates for faculty positions.

All 11 institutions responded to the request for information. A tabulation of information showed a total of 1,085 department chairs at these 11 institutions. As was expected, all 11 institutions claimed not to have any formal institutional policy against hiring its own graduates for faculty positions. As a confirmation of the national trend towards hiring one's own minority graduates, respondents of

both the Ohio State University and Michigan State University stated that they had developed written policies that allowed for special considerations in hiring their own students who were from the under-represented groups. Regarding the informal institutional policy, 6 institutions indicated the non-existence of such an informal policy; 3 institutions did not respond; and 2 institutions indicated that though they did not have an informal institutional policy against faculty inbreeding, in practice most departments would not hire from within. Most of these universities did not have readily available information regarding the percentages of inbred faculty except five institutions: The University of Arizona had an inbreeding ratio of 10.40 percent; Texas A & M University of 12.40 percent; Iowa State University of 18.50 percent; Michigan State University of 18 percent; and University of Wisconsin-Madison, 19.34 percent. Table 2 summarizes this information.

The Research Sample

After the research population was defined, this researcher proceeded to select the sample using a stratified random sampling technique. This technique was used to ensure a proportional representation of all academic disciplines in the sample. The 1,085 department chairs from the 11 land-grant universities were first grouped into six major academic disciplines that roughly corresponded to six colleges or schools frequently formed in major research universities. These six disciplines were considered six population strata for the purpose of sampling. The researcher then used a procedure called proportional allocation to make sure that each stratum contributed to the sample a number of participants that was proportional to its size in the population strata, and this procedure yielded a sample

Table 2

General Information Regarding the Eleven Land-Grant Universities Under Study

Institution	Carnegie Classification	No. of Departments	Existence of Formal Institutional Policy against Inbreeding	Actual Hiring Practice regarding Own graduates	Percentage of Inbred faculty
University of Arizona	Pure Research I	96	No	Not encouraged	10.40%
University of California–Davis	Pure Research I	95	No	Not encouraged	Unknown
Iowa State University	Pure Research II	67	No	Not encouraged	18.50%
Univ. of Illinois at Urbana-Champaign	Pure Research I	107	No	Most departments do not	Unknown
Michigan State University	Pure Research I	102	No	Traditionally not recommended; currently special consideration given to promising graduate students from under-represented groups.	Unknown
University of Minnesota	Pure Research I	135	No	Not encouraged	Unknown
North Carolina State University	Pure Research I	63	No	Not encouraged	Unknown
The Ohio state University	Pure Research I	159	No	Not encouraged, but special consideration given to own minority candidates.	18.00%
Purdue University	Pure Research I	73	No	Not encouraged	Unknown
Texas A & M University	Pure Research I	74	No	Not recommended	12.40%
University of Wisconsin–Madison	Pure Research I	114	No	Many departments had an informal policy not to hire from within.	19.34%

size of 543. The distribution of the stratified sample in the six disciplinary strata is as follows: (1) Agriculture/ Natural Resources and Environmental Studies, 20.98 percent, (n=114); (2) Business/ Management, 5.52 percent, (n=30); (3) Education/ Family and Consumer Sciences, 5.52 percent, (n=30); (4) Engineering/ Technology, 10.30 percent (n=56); (5) Liberal Arts/ Sciences, 36.57 percent, (n=198); and (6) Medicine/ Veterinary Medicine, 21.20 percent, (n=115). On the basis of this information, the researcher selected 543 names of department chairs by using a table of random numbers. Table 3 gives the distribution of the population and the sample in the six strata. The comparative figures in this Table indicate that the selected sample is representative of the population relative to the distribution of the disciplinary strata.

Data Collection

After obtaining approval of the research project from the Human Subjects Review Committee at Iowa State University, the investigator produced and mailed out 543 questionnaires to all department chairs sampled for investigation on June 1, 1992. Prior to the first mailing, the researcher obtained information about the beginning and ending dates of summer school sessions at all 11 land-grant institutions. The date of June 1 was chosen because it appeared to be the most approximate date for the questionnaires to reach department chairs in the optimal time frame, considering that most of them would probably start their summer vacation plans later in the month. More importantly, the date would allow for sufficient time for follow-up mailings before the summer sessions ended.

Each of the 543 department chairs received a personally-addressed package containing a letter of transmittal and the survey instrument. Within four weeks

Table 3

A Comparison of Research Population and Sample Distribution

Academic Disciplines	Population Breakdown		Sample Breakdown	
	N	%	N	%
Agriculture/Natural Resources and Environmental Sciences	230	21.20	114	20.98
Business/Management Sciences	57	5.25	30	5.52
Education/Family and Consumer Sciences	60	5.53	30	5.52
Engineering/Technology	112	10.32	56	10.30
Liberal Arts/Sciences	396	36.50	198	36.57
Medicine/Veterinary Medicine	230	21.20	115	21.20
Combined	1085	100.00	543	100.00

after the initial mailing, 235 completed surveys were returned. To encourage more responses from the sample, personal telephone calls were made to individuals who or whose secretaries could be reached through the universities' switch board. Those who could not be reached on the phone were sent the second mailing of questionnaires on July 3, 1992.

All completed questionnaires were returned to the RISE at Iowa State University. The staff in the RISE had conducted numerous surveys of internal and external constituencies in the past and was well aware of the need for confidentiality and anonymity of the respondents. For this reason, only limited access to the completed questionnaires was available. Furthermore, because the researcher had taken precaution to analyze and report data only in aggregate form, identification of individual respondents was strictly protected.

The telephone contacts and the second mailing helped to secure 132 more returns, thus bringing the total returned questionnaires to 367. Twelve of the returned questionnaires had to be excluded because they were either blank or grossly incomplete, resulting in a total sample of 531. Of this adjusted sample group, 355 responses were satisfactory, which made a response rate of 66.85 percent. Table 4 below presents the breakdown of the usable returned questionnaires by institutional and disciplinary affiliation.

Of the 355 department chairs who chose to participate in the study, 19.44 percent (n=69) had been a department chair for 1-3 years, 16.34 percent (n=58) for 4-6 years, and 64.23 percent (n=228) 7 years and above. Department chairs who were inbred represented 13.80 percent (n=49), and non-inbred department chairs were 86.20 percent (n=306), of all participants. In addition, the departments were categorized into three stages, namely, regressing stage, maintaining/ stable

Table 4

A Breakdown of Responses by Institutions and Academic Disciplines

Respondents	U of A	U of Cal	U of Ill	ISU	MSU	U of M	NCSU	OSU	Purdue University	Texas A & M U	U of W	Combined
Agriculture/Natural Resources and Environmental Sciences	6	10	6	10	6	12	12	7	10	10	9	100
Business/Management Sciences	0	0	0	0	5	1	1	1	2	2	0	12
Education/Family and Consumer Sciences	1	0	2	4	3	3	4	3	1	2	3	26
Engineering/Technology	3	3	4	2	3	3	4	4	7	4	1	38
Liberal Arts/Sciences	7	7	10	13	13	12	6	20	5	6	9	108
Medicine/Veterinary Medicine	5	10	5	7	3	8	2	16	2	2	11	71
Combined	22	30	27	36	33	39	29	51	29	26	33	355

stage, and actualizing/ growing stage. Pertaining to this aspect, 18.87 percent (n=67) of the participants were chairs of regressing departments, 40.56 percent (n=144) were chairs of maintaining/ stable departments, and 40.56 percent (n=144) were chairs of actualizing/ growing departments. Table 5 shows the number and percentage of survey participants according to their length of service, inbreeding status, and the developmental stage of departments.

Data Treatment

Before attempting data analyses, the researcher numerically coded each of the responses to the questionnaires and transcribed them to a computer system. The most updated version of the Statistical Analysis System (1989) was used to obtain descriptive and inferential statistics. This statistical package consisted of many different computer programs and procedures designed to analyze and manipulate the kind of data most commonly seen in the social sciences.

As the first step, the researcher conducted an analysis of the general characteristics of the survey's respondents. For each of the 55 variables used in the questionnaire, descriptive statistics such as the frequency, mean, standard deviation, and skewness were obtained. This procedure helped to form an overall picture about the type of department chairs responding to the survey and the characteristics of the data.

Then the researcher assigned a score of three (3) to the missing responses for the descriptive part of data analyses. It was assumed that failure to respond to certain items of the questionnaire reflected an uncertainty on the part of the respondents. The score of three (3) reflected the group mean. Inserting it into each empty cell helped preserve the overall agreement of the respondent with each

Table 5

A Frequency Distribution of Survey Participants According to the Developmental Stages of Departments, Inbreeding Status, and Years in Service

Respondents	U of AZ	U of CA	U of IL	ISU	MSU	U of M	NCSU	OSU	Purdue University	Texas A & M U	U of W	Combined
Regressing	4	8	9	5	10	9	5	9	3	3	2	67
Stages Maintaining	7	13	11	17	14	16	10	19	14	6	7	144
Growing	11	9	7	14	9	14	14	13	12	17	14	144
Inbreeding Yes	0	5	5	6	4	9	2	10	3	0	5	49
Status No	22	25	22	30	29	30	27	41	26	26	28	306
Years in Service 1-3 years	5	9	4	8	9	6	4	6	5	4	9	69
4-6 years	3	5	6	8	6	8	5	6	4	4	3	58
7 + years	14	16	17	20	18	25	20	39	20	18	21	228

particular item. Even though not all items needed to be used in answering the research questions and hypotheses, all rating items were considered equally important in the initial coding process. If missing values occurred to a certain observation were too extensive to be accurately corrected, they were removed from the inferential part of data analyses.

Dependent variables in this study are response ratings given to individual items of Parts I & II of the survey by respondents. The ratings range from 1 to 5, which, depending on the context, means "agree to disagree," or "greater to less," or "very important to least important." To make it possible to test hypotheses and to improve the content validity of the survey instrument, relevant survey items were often grouped together to create composite dependent variables. For instance, "Teaching Productivity" was created to indicate respondents' perceptions about inbred faculty's teaching productivity as compared with that of non-inbred faculty; "Research Productivity" was created to indicate respondents' perceptions about inbred faculty's research productivity as compared to that of the non-inbred; "Academic Advancement" was created to indicate respondents' perceptions about inbred faculty's chance for academic advancement as compared with that of the non-inbred; "Cosmopolitan Orientation" was created to indicate respondents' perceptions of inbred faculty members' cosmopolitan orientation as compared with that of the non-inbred; and finally, "Local Orientation" was created to indicate respondents' perceptions about inbred faculty's local orientation as compared with that of non-inbred faculty.

Similarly, a new variable "Quality" was created to denote factors that contribute to the quality of academic programs; "Image" was created to denote

factors that contribute to the image of academic departments; and "Preparation" was created to denote how graduate students could best prepare for academic careers.

Independent variables in this study were data on personal and background information regarding respondents and the departments, colleges or schools, and institutions they represent. This information included department chairs' length of service, inbreeding status, academic disciplines, and developmental stages.

Hypotheses and Statistical Techniques

The data derived from the survey were used to test the research questions and hypotheses that were stated in Chapter I. Descriptive analyses of the data were conducted with frequency distribution and certain measures of the central tendency and dispersion such as mean and standard deviation. Inferential analyses of the data were conducted by testing each of the 11 Research Hypotheses through the use of nonparametric statistical test such as the Chi-square and parametric tests such as the t-test for independent means and the one-way analysis of variance. The statistical techniques that were applied to test the hypotheses are explained as follows:

Chi-square: This statistical technique is commonly used to test the significance of difference between discrete frequency accounts or between categorized variables that were originally continuous. In the present study, Chi-square was used to test Research Hypotheses 1 and 2.

The t-test: The t-test for independent means was used to test Research Hypotheses 3, 4, and 5. T-test is commonly used to determine the level of statistical significance of an observed difference between sample means. Its test results can

tell whether the observed difference is significantly greater than a difference that can be expected by mere chance.

One-Way Analysis of Variance: The one-way analysis of variance (ANOVA) was used to test Research Hypotheses 6 through 11. Using this statistical technique, the equality of different population means can be tested simultaneously while maintaining the pre-established Type I error rate. The underlying assumption is that the total variation of scores can be attributed to two sources--variances between and within groups. The one-way ANOVA yields an F-ratio of variances between groups to variance within groups. If the F ratio exceeds the critical value of F, the null hypotheses can be rejected, suggesting that the population means are not all equal. When the F-value is significant, and more than two sample means are included, multiple comparison procedures are used to determine which sample means are significantly different from the others.

Before testing the stated hypotheses, it was necessary for this researcher to select an appropriate level of significance in order to be clear about the criterion for rejecting hypotheses. The level of significance is defined as the probability of making Type I error when testing a null hypothesis (Hinkle, Wiersma, & Jurs, 1988). The most commonly used levels of significance are .05, .01, or .001, depending on the nature of the study. It has been shown through review of literature that the .05 level of significance is appropriate for research that involves human perceptions and attitudes. Since the underlying concepts of this study are primarily concerned with respondents' perceptions on various educational variables, the .05 level of significance should also be sufficient for purpose of this study. When choosing this particular level of significance, the researcher assumes a maximum of 5 percent of risk in rejecting a null hypothesis and in interpreting research findings.

Summary

The research strategy for this study is directed towards obtaining generalizability through establishing a database of sufficient size. The survey instrument was evaluated by a panel of experts and tested through a pilot study. The survey instrument included 37 questions covering a broad range of issues regarding faculty inbreeding and was sent to 543 department chairs. Of the 367 returned questionnaires, 355 were usable, which represents a 66.80 percent return rate.

Data were numerically coded and transcribed to the computer for tabulation and analyses. Because of the nature of the data, frequency accounts and measures of central tendency and dispersion were used to conduct descriptive analyses, and inferential statistics such as Chi-square, t-test, and one-way ANOVA were used to test hypotheses posed in Chapter I. Research Hypotheses 1 and 2 were tested through use of the Chi-square, Research Hypotheses 3, 4, and 5 were tested through use of t-test for independent means, and Research Hypotheses 6 through 11 were tested using the one-way ANOVA. The .05 level of significance was chosen as the criterion for making decisions of rejecting or accepting the null hypotheses. The results of these analyses are presented in the next chapter.

CHAPTER IV

RESEARCH FINDINGS

This chapter presents analyses of the data and reports research findings using both descriptive and inferential statistical procedures. Results from descriptive analyses of the data are presented in the first section, and results from inferential analyses of the data are presented in the second section. The chapter concludes with a summary of general research findings.

Descriptive Analyses of the Data

To conduct descriptive analyses of the data, the researcher used a number of statistical measures, such as mean, standard deviation, and frequency distributions. Results of the analyses provide answers to Research Questions 1 through 7.

Research Question 1: To what extent does the phenomenon of faculty inbreeding exist in departments of the 11 land-grant institutions under study?

Analysis of the data indicated that the proportions of inbred faculty members among the 355 departments range from 0 to 80 percent, with an average of 4.10 percent. In calculating the range and mean percentages, two extreme cases (87% , n=1; 100% n=1) were excluded because they each had only one frequency account and were considered outliers.

Research Question 2: What are the prevalent policies among departments of the 11 land-grant universities concerning faculty inbreeding?

The answer to this research question comes from responses to item 1 of the survey questionnaire. Respondents were asked to indicate if their departments

had a formal, informal, or no policy regarding faculty inbreeding. Of the total 355 respondents who represented the same number of academic departments, 15 (4.20%) indicated to have a formal policy that prohibited the employment of their own graduates, 176 (49.60%) indicated to have an informal policy against hiring their own graduates, and 164 (46.20%) indicated to have no policy regarding faculty inbreeding. This result shows that over half of the departments (n=191, 53.80%) under study had either a formal or informal policy that restricted the employment of their own graduates as faculty members.

Respondents whose departments had a formal or informal policy against faculty inbreeding were further asked to indicate how faculty inbreeding may affect departmental image, institutional vitality, faculty academic advancement, and research productivity. Responses to these sub-items of the questionnaire are summarized in Table 6. It is evident from the comparative data that department chairs perceived faculty inbreeding most likely to affect institutional vitality and departmental image. Regarding the effect of faculty inbreeding on the opportunity for academic advancement and research productivity, respondents' perceptions were less certain, even though slightly more respondents perceived that faculty inbreeding had a negative effect on inbred faculty's chance for academic advancement and on their research productivity.

Research Question 3 (a): Did any departments offer tenure-track faculty appointments to their own graduates in the last five years?

Since over 50 percent of the departments had explicit or implicit policies that prohibited the appointment of their own graduates as faculty members, responses to this research question were what could be expected. Sixty-nine percent (n=245) of the respondents indicated that their departments had not

Table 6

The Effect of Faculty Inbreeding on Different Academic Functions as Perceived by Department Chairs at Eleven Land-Grant Universities

Areas of Concern	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
	n	%	n	%	n	%	n	%	n	%
Institutional Vitality	129	67.5	52	27.2	07	3.7	00	00	03	1.6
Departmental Image	84	44.0	55	28.8	44	23.0	03	1.6	05	2.6
Faculty Academic Advancement	44	23.3	52	27.2	50	26.0	21	11.1	24	12.7
Research Productivity	27	14.3	36	19.0	70	36.6	20	10.6	38	20.1

offered tenure-track faculty positions to their own graduates in the last five years, whereas only 31 percent (n=110) indicated that they had done so .

Those respondents who indicated that their departments offered tenure-track faculty positions to their own graduates in the last five years were further asked to list reasons for choosing their own graduates. As is shown in Table 7, departments hired their own graduates for tenure-track faculty positions not because outside applicants turned down an offer, or because the practice fostered loyalty to the department and institution, nor because it was a cost-saving measure; rather, it was because (1) the candidate had superior qualifications (91%, n=100), and (2) traditional assumptions about the inbreeding practice lacked in empirical support (66%, n=73).

Research Question 3 (b): Which candidates would departments hire to fill faculty vacancies when their qualifications are identical?

Regarding this research question, respondents had four choices to make: (1) a graduate of your own institution, (2) a graduate from another institution, (3) a graduate with an appropriate/ needed area of specialization, and (4) no preference. Out of the 355 respondents, 2 respondents (0.60%) indicated a preference for graduate of their own institution, 34 (9.60%) indicated no preference, 113 (31.80%) indicated a preference for graduates of another institution, 206 (58%) indicated a preference for graduates with an appropriate field of specialization. When options 2 and 3 were added together, it became apparent that the majority of the departments chairs (n=319, 89.8%) preferred to hire a candidate who was trained by an institution other than their own and who had the appropriate field of specialization.

Table 7

A Summary of Reasons Why Departments Hired Their Own Graduates
for Tenure-Track Faculty Positions

Reasons for choosing one's own graduates	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
	n	%	n	%	n	%	n	%	n	%
Candidate has superior quality	88	80	12	11	07	06	01	01	02	02
Traditional assumptions about inbreeding lack in empirical support	23	21	50	45	18	16	12	01	07	06
It is a cost-saving measure	02	05	09	08	36	33	14	13	44	40
It fosters loyalty to the department and institution	06	05	18	16	53	48	08	07	25	23
Outside applicants turned down an offer	11	10	06	05	35	32	06	05	52	47

Research Question 4 (a): Would departments adopt a different recruitment policy towards faculty inbreeding knowing that severe competitions for a limited number of high-quality candidates lie ahead?

This research question intends to find whether the changing academic labor market has an effect on the recruitment policy regarding faculty inbreeding. Of all respondents, 67 percent (n=237) indicated that they would be supportive of hiring their own graduates if they are highly qualified, and 33 percent (n=117) indicated that they would not support hiring their own graduates regardless of their qualifications.

Research Question 4 (b): Would departments support selective faculty inbreeding if candidates are highly qualified and are from an ethnic minority group?

Literature review indicates that institutions are searching aggressively for high-quality candidates who are from an under-represented minority group for faculty positions. Data from this study lend support to the literature. Of the department chairs under study, 80 percent (n=284) indicated support for selective inbreeding when candidates were of high quality and were from a minority group because "increasing the representation of minority faculty was very important." The remaining 20 percent (n=71) indicated no support for selective inbreeding regardless of candidates' background and qualifications because "inbreeding was dysfunctional and should never be practiced."

Research Question 4 (c): Would departments support selective inbreeding if candidates are highly qualified women?

The current literature also indicates that higher education institutions are actively recruiting top-quality women candidates for faculty positions. Analysis

of data from this study provides confirmation. Of all respondents surveyed, 74 percent (n=263) indicated that they would be supportive of selective inbreeding when candidates were highly-qualified women because "increasing the percentage of women faculty was very important." The remaining 26 percent (n=92) took the opposite position because they felt that "inbreeding was dysfunctional and should never be practiced." A summary of responses to research questions 4 (a), (b), and (c) are also presented in Table 8.

Research Question 5: As perceived by the department chairs, what factors would best strengthen the quality of academic programs?

For this research question, respondents were given seven items to which they could respond. As Table 9 illustrates, department chairs perceived that (1) enrolling high-quality students was the most important factor in strengthening the quality of graduate programs (91%, n=325). This was followed in order of importance by (2) boosting faculty morale (81%, n=291), (3) recruiting more qualified Ph.D.'s from other institutions (72%, n=256), (4) recruiting more ethnic minority faculty members (60%, n=217), and (5) recruiting more women faculty members (58%, n=207). Interestingly, department chairs gave (6) eliminating faculty inbreeding practice the least rating of importance even though they rated hiring qualified Ph.D.'s from other institutions as an important factor. In fact, 128 (36%) of them considered this option as an unimportant or least important factor in strengthening the quality of academic programs.

Research Question 6: As perceived by the department chairs, what factors would best enhance the image of academic departments?

Bridgeland (1980) observed that academic departments will always be conscientious about building a positive image. Results from Research Question 6

Table 8

A Summary of Responses Towards Selective Faculty Inbreeding

Responses	Support selective inbreeding if candidates are highly qualified		Support selective inbreeding if candidates are qualified minorities		Support selective inbreeding if candidates are qualified women	
	n	%	n	%	n	%
Yes	237	67.0	284	80.0	263	74.0
No	118	33.0	71	20.0	92	26.0

Table 9

Factors That Would Serve to Strengthen the Quality of Academic Programs

Areas of Concern	Very Important		Important		Neutral		Not Important		Least Important	
	n	%	n	%	n	%	n	%	n	%
More qualified Ph. D.'s from other institutions	141	40	115	32	78	22	5	1.4	14	4.0
Boosting faculty morale	151	42.5	140	39	56	15.7	7	2.0	1	0.3
Enrolling high-quality students	235	66.2	90	25.4	25	7.0	2	0.6	3	0.8
Eliminating inbreeding practice	15	4.2	53	14.9	159	44.8	41	11.4	87	24.5
Recruiting more ethnic minority faculty members	73	20.6	142	40	111	31.3	21	5.9	8	2.3
Recruiting more women faculty members	73	20.6	134	37.7	121	30.1	19	5.4	8	2.3

report the factors that department chairs considered important in enhancing the image of a department. As Table 10 illustrates, factors that received high ratings of importance were (1) more research funding (97%, n=344), followed in order of importance by (2) faculty research productivity (96%, n=340), (3) high-quality students (96%, n=340), (4) an expanding job placement market for graduates (79%, n=282), and (5) faculty commitment to undergraduate teaching (72%, n=255). As can be expected, (6) employing graduates of one's own institution was not regarded as a contributing factor to department image; but interestingly the least number of department chairs (n=261, 67%) chose this response item.

Research Question 7: How can graduate students best prepare for an academic career?

Respondents were fairly consistent in their viewpoints regarding this issue. Most department chairs advised faculty aspirants to look to institutions other than their own for faculty positions, even though many of them indicated that they would support selective inbreeding (see Table 11). The reasons for them to give this advice is open to interpretations. It may be due to the general sentiment against inbreeding or the fact that certain departments had formal or informal policies that prohibited the employment of their own graduates. Furthermore, department chairs encouraged graduate students to publish more articles before graduation, presenting at professional conferences, establishing professional networks in one's field of discipline, and improving their teaching skills.

Inferential Analyses of the Data

This portion of the chapter reports the results of inferential analyses of the data relative to Research Questions 8, 9, 10, 11, and 12. These five research

Table 10**Factors That Would Serve to Enhance the Image of Academic Departments**

Areas of Concern	Very Important		Important		Neutral		Not Important		Least Important	
	n	%	n	%	n	%	n	%	n	%
Employing graduates by own university	9	2.5	12	3.4	105	29.6	73	20.1	156	43.9
More research funding	224	63.1	120	33.8	7	2.0	1	0.3	3	0.8
High-quality students	258	72.7	82	23.1	13	3.7	0	0	2	0.6
An expanding job placement market for graduates	122	34.4	160	45.1	61	17.2	10	2.8	2	0.6
Faculty research productivity	256	72.1	84	23.7	14	3.9	1	0.3	0	0
Faculty commitment to undergraduate teaching	118	33.2	137	38.6	71	20	21	5.9	8	2.3

Table 11

Indicators of How Graduate Students Can Best Prepare for an Academic Career

Areas of Concern	Very Important		Important		Neutral		Not Important		Least Important	
	n	%	n	%	n	%	n	%	n	%
Publishing articles before graduation	199	56.1	133	37.5	18	5.1	3	0.8	2	0.6
Presenting at professional conferences	191	53.8	143	40.3	19	5.4	2	0.6	0	0.0
Improving teaching skills	136	38.3	157	44.2	53	14.9	8	2.3	1	0.3
Establishing professional networks in one's field of discipline	166	46.8	158	44.5	30	8.5	1	0.3	0.0	0.0
Looking beyond one's Alma Mater for faculty positions	229	64.5	94	26.5	29	8.2	1	0.3	2	0.3

questions are converted to 11 research hypotheses, which is necessary for statistical analyses and interpretation. For each hypothesis, dependent variables are measurements of respondent's perceptions on various survey items, while independent variables are items related to respondent's personal background characteristics such as their inbreeding status, length of service, developmental stages of their departments, and their disciplinary affiliations. In testing hypotheses, the inferential statistical procedure used to analyze the data is first described and followed by test results, indicating whether or not the hypothesis is rejected at the selected level of significance. Statistical and, whenever appropriate, practical significance will be reported, but discussions of results and their implications will be left to the next chapter.

Research Question 8: Are there significant differences in the extent of faculty inbreeding across different organizational types?

This research question generated two hypotheses, and the test of both hypotheses was based on the Chi-square test of homogeneity for the multi-sample case. Academic departments fell into three types based on the developmental stages of each department. Type I included departments at the regressing stage, Type II included those at the maintaining/stable stage, and Type III included those at the actualizing/growing stage. The extent of faculty inbreeding, which was originally a continuous variable, was categorized into high- and low-inbreeding groups.

Before the Chi-square analysis was run, the cut-off point for the high- and low-inbreeding groups had to be chosen. As was suggested in the literature review, the national average of faculty inbreeding extended from 11 percent (Wyer, 1980) to 15.40 percent (Lumsden, 1990). The incomplete information on the

extent of faculty inbreeding of the 11 land-grant universities showed a range from 10.40 percent to 19.30 percent. Based on this information, the cut-off point for the high- and low-inbreeding groups for this study was decided on 13 percent. In other words, percentages below 13 were categorized in the low-inbreeding group, and percentages above 13 were categorized in the high-inbreeding group. So the data on the extent of faculty inbreeding were collapsed into two discrete groups for purpose of analysis. As a result of this treatment of data, the expected frequency in all cells exceeded five.

Null Hypothesis 1: There are no significant differences in the extent of faculty inbreeding across different departmental types.

Findings: The hypothesis that there are no significant differences in the extent of faculty inbreeding in the three department types was rejected at the .05 level of significance (Chi-square = 8.372, $df = 2$, $p < .05$). Table 12 presents the frequencies for all three department types in the low- and high inbreeding groups. An examination of the Table reveals that the frequencies in the high- and low-inbreeding groups are not significantly different among Type I departments--those at the regressing stage; and yet, the low-inbreeding groups significantly outnumber the high-inbreeding groups among both Type II and Type III departments--those at the maintaining and actualizing stages. In addition, the ratio between the high-inbreeding group and low-inbreeding group is 1:1.16 for Type I departments, 1:2.2 for Type II departments, and 1:2.7 for Type III departments. These ratios suggest that Type I departments proportionally have a higher extent of inbreeding than both Types II and III departments; Type II departments proportionally have a higher extent of inbreeding than Type III departments. These findings certainly contribute to the understanding of the

Table 12

Chi-square Analysis of the Extent of Faculty Inbreeding
by Department Types

(N = 355)

Stages (Types)	Low-inbreeding Group (PCT)	High-inbreeding Group (PCT)	Total Number (PCT)
Regressing (Type I)	36 (10.14)	31 (8.73)	67 (18.87)
Maintaining (Type II)	99 (27.89)	45 (12.68)	144 (40.56)
Actualizing (Type III)	106 (29.86)	38 (10.70)	144 (40.56)
Total	241 (67.89)	114 (32.11)	355 (100.00)
Chi-square = 8.372 p= 0.015 Significance = .05			

patterns of faculty inbreeding at the departmental level.

Null Hypothesis 2: There are no significant differences in the extent of inbreeding across different academic disciplines.

This hypothesis tests whether there are significant differences in the extent of inbreeding across the six different academic disciplines identified in Chapter III. The disciplines include: (I) agriculture/ natural resources and environmental sciences, (II) business/ management sciences, (III) education/ family and consumer sciences, (IV) engineering/ technology, (V) liberal arts/ sciences, (VI) medicine/ veterinary medicine. The extent of inbreeding was also categorized into low- and high-inbreeding groups. In doing so, however, one of the 12 cells yielded an expected frequency account of two. This would have been a problem if the contingency table was 2×2 ; however, since the contingency table for this test was 2×6 , the threat of discontinuity in the Chi-square distribution resulting from one small expected frequency was of a minimal consequence.

Findings: The hypothesis that there are no differences in the extent of inbreeding across the six academic disciplines was rejected at the .01 level of significance (Chi-square = 19.179, df = 5, $p < .01$). As Table 13 illustrates, the differences between the low- and high-inbreeding groups are less clear in disciplines (I), (II) and (VI); and yet, the differences are much more pronounced in disciplines (II), (IV), and (V). The ratios between the high-inbreeding group and low-inbreeding group are 1:1.29 for discipline (VI), 1:1.30 for discipline (I), 1:1.8 for discipline (III), 1:3.75 for discipline (IV), 1:3.90 for discipline (V), and 1:5 for discipline (II). These ratios indicate that, in comparison, disciplines (I), (III), (VI) have a higher extent of inbreeding while disciplines (II), (IV) and (V) have a lower extent of inbreeding. This finding provides useful information regarding the

Table 13

Chi-square Analysis of the Extent of Faculty Inbreeding
by Disciplinary Types

(N = 355)

Disciplines	Low-inbreeding Group (PCT)	High-inbreeding Group (PCT)	Total Number (PCT)
(I) Agriculture/Natural Resources/ Environmental Sciences	58 (16.34)	42 (11.83)	100 (28.17)
(II) Business/ Management Sciences	10 (2.82)	2 (0.56)	12 (3.38)
(III) Education/ Family and Consumer Sciences	17 (4.79)	9 (2.54)	26 (7.32)
(IV) Engineering/ Technology	30 (8.45)	8 (2.25)	38 (10.70)
(V) Liberal Arts/Sciences	86 (24.23)	22 (6.20)	108 (30.42)
(VI) Medicine/Veterinary Medicine	40 (11.27)	31 (8.73)	71 (20.00)
Total	241 (67.89)	114 (32.11)	355 (100.00)

Chi-square = 19.179

p = 0.002

Significance = .01

relationship between faculty inbreeding and academic disciplines.

Research Question 9: Is there a significant difference in the acceptance of selective inbreeding between inbred and non-inbred department chairs?

This research question asks whether department chairs who are inbred and those who are non-inbred hold different attitudes towards the practice of selective faculty inbreeding under different circumstances. To answer this question research hypotheses 3, 4, and 5 were generated and tested with t-test for independent means.

Null Hypothesis 3: There is no significant difference between inbred and non-inbred department chairs in their acceptance of selective faculty inbreeding when the demand for high-quality faculty is high.

Findings: T-test for independent means yielded significant results, which allowed the rejection of Null Hypothesis 3 ($t = -4.877$, $p < .0001$) at the .001 level of significance. As shown in Table 14, the mean for inbred department chairs was 1.93 whereas the mean for non-inbred department chairs was 2.86. The differences in the means of the two groups indicated that non-inbred department chairs expressed less acceptance for this form of selective inbreeding than their inbred counterparts. No significant difference in variance was found [$F(48, 305) = 1.41$, $p < .145$], which denoted two homogeneous groups. Because of the equal variance, the pooled variance t formula was used.

Null Hypothesis 4: There is no significant difference between inbred and non-inbred department chairs in their acceptance of selective inbreeding when departments are disadvantaged in their geographic locations.

Findings: T-test for independent means was used to test this hypothesis, and significant differences between the means of two groups were found.

Table 14
A Comparison of Acceptance of Selective Inbreeding by Inbred and
Non-Inbred Department Chairs When the Demand for High-
Quality Faculty Is High

Group	Number	Mean	S.D.	T-Value	2-Tailed Probability
Inbred	49	1.938	1.197	-4.877	0.0001***
Non-Inbred	306	2.862	1.423		

***Significant at .001 level.

Based on the test results, the null hypothesis was rejected at .001 level of significance ($t = -3.38, p < .0008$). As Table 15 suggests, the mean for inbred department chairs was 2.816 whereas the mean for non-inbred department chairs was 3.477. It appeared that non-inbred department chairs were less receptive of this form of selective inbreeding than the inbreds. Since no significant difference in variance was found [$F(48, 305) = 1.34, p < .150$], the pooled variance t formula was used.

Null Hypothesis 5: There is no significant difference between inbred and non-inbred department chairs in their acceptance of selective inbreeding when departments are disadvantaged in their financial resources.

Findings: This hypothesis was also tested with the t -test for independent means. The test produced differences significant enough to reject the null hypothesis ($t = -3.68, p < .0003$) at the .001 level of significance. Table 16 shows that the mean for non-inbred department chairs was 3.735 as compared to a mean of 3.040 for inbred department chairs. Once again, the former group gave less support to this form of selective inbreeding than the latter group. In addition, no significant difference in variance was found [$F(48, 305) = 1.41, p < .145$], indicating equal variance between the two groups. For this reason, the pooled variance t formula was used.

Research Question 10: Are there significant differences in the overall rating of scholarly productivity (of inbred faculty as compared with that of non-inbred faculty) by department chairs with different lengths of service?

This research question assesses the differences in respondents' perceptions of scholarly productivity of inbred faculty when compared with that of non-inbred faculty based on their years of service as department chairs. The length of service

Table 15

A Comparison of Acceptance of Selective Inbreeding by Inbred and
Non-Inbred Department Chairs When Departments Are
Disadvantaged in Their Geographic Locations

Group	Number	Mean	S.D.	T-Value	2-Tailed Probability
Inbred	49	2.816	1.438	-3.38	0.0008***
Non-Inbred	306	3.477	1.241		

*** Significant at .001 level.

Table 16

A Comparison of Acceptance of Selective Inbreeding by Inbred and Non-Inbred Department Chairs When Departments Are Disadvantaged in Their Financial Resources

Group	Number	Mean	S.D.	T-Value	2-Tailed Probability
Inbred	49	3.040	1.526	-3.68	0.0003***
Non-Inbred	306	3.735	1.170		

*** Significant at .001 level.

were broken down to three categories: (1) short-term department chairs who had a tenure from 1 to 3 years, (2) medium-term department chairs who had a tenure from 4 and 6 years, and (3) long-term department chairs who had served at the post for more than 7 years. The measurement of scholarly productivity, as was discussed in the literature review, covered the full range of faculty scholarly activities including teaching productivity, service productivity, and research productivity. In order to evaluate all three components of scholarly productivity, the research question was translated to hypotheses 6, 7, and 8.

Null Hypothesis 6: There is no difference in the rating of teaching productivity of inbred faculty as compared to that of non-inbred faculty by department chairs with different lengths of service.

The measurement of teaching productivity was an average rating given to questionnaire items 10, 11, and 12. The three sub-items respectively asked respondents to rate inbred faculty's versus non-inbred faculty's (1) interest in classroom teaching, (2) teaching load, and (3) teaching effectiveness. A total of 351 observations were available in this analysis.

Findings: The one-way analysis of variance procedure was employed to test the relationship between respondents' rating of teaching productivity and their length of service. Test results yielded no significant differences [$F(2, 349) = .80, p < .46$]; and as a result, the null hypothesis could not be rejected. The means and standard deviations for respondents' rating of teaching productivity are shown in Table 17, and results of the analysis of variances are shown in Table 18. A review of test results suggests that department chairs, regardless of how long they have served at their posts, gave approximately equal ratings to teaching productivity for inbred faculty when compared with that of non-inbred faculty.

Table 17

Means and Standard Deviations for Comparative Measurement of Teaching Productivity by Department Chairs

LENGTHS OF SERVICE	N ^a	MEAN	STANDARD DEVIATION
Short-term	67	6.0955	0.9094
Medium-term	58	6.0862	1.1295
Long-term	227	6.2325	0.9988

^a Missing values were excluded from the statistical analysis.

Table 18

Analysis of Variance of Comparative Measurement of Teaching Productivity by Lengths of Service

SOURCES OF VARIATIONS	df	MEAN SQUARES	F-VALUE
Major	2	0.979	0.77
Residual	352	1.264	

Null Hypothesis 7: There are no significant differences in the rating of research productivity of inbred faculty as compared to that of non-inbred faculty by department chairs with different lengths of service.

As in hypothesis 6, the measurement of research productivity in Null Hypothesis 7 was an average rating given to three questionnaire items that included 13, 14, and 15. Respondents were asked to give their comparative ratings for inbred faculty's and non-inbred faculty's (1) interest in research and publication, (2) overall research productivity over the past five years, and (3) level of research funding generated over the past five years. A total of 346 observations were usable in this analysis.

Findings: Test results from one-way analysis of variance produced no significant differences [$F(2, 343) = .50, p < .60$], thus failing to reject the hypothesis that there was no difference in the rating of research productivity of inbred faculty as compared to that of non-inbred faculty by department chairs with different lengths of service. The means and standard deviations for ratings of research productivity are shown in Table 19, and results of analysis of variances are shown in Table 20. It is worth noting that department chairs in all three categories of length of service rated equally the research productivity of inbred faculty when compared with that of non-inbred faculty.

Null Hypothesis 8: There is no difference in the rating of service productivity of inbred faculty as compared to that of non-inbred faculty by department chairs with different lengths of service.

Findings: The one-way analysis of variance procedure was the statistical technique used to test this hypothesis, and test results did not produce

Table 19

Means and Standard Deviations for Comparative Measurement of
Research Productivity by Department Chairs

LENGTHS OF SERVICE	N ^a	MEAN	STANDARD DEVIATION
Short-term	66	6.878	1.200
Medium-term	55	6.600	1.721
Long-term	225	6.692	1.544

a Missing values were excluded from the statistical analysis.

Table 20

Analysis of Variance of Comparative Measurement of Research
Productivity by Lengths of Service

SOURCES OF VARIATIONS	df	MEAN SQUARES	F-VALUE
Major	2	1.624	0.50
Residual	343	3.293	

significant differences that justified the rejection of the hypothesis [$F(2, 348) = .44$, $p < .64$]. Test results in the Tables 21 and 22 indicate no significant differences in the rating of service productivity of inbred faculty as compared with that of non-inbred faculty by all department chairs, with their length of service taken into consideration.

Research Question 11: Are there significant differences in the rate for academic advancement for inbred faculty as compared with that for non-inbred faculty as perceived by department chairs with different lengths of service?

Previous studies (Hargens & Farr, 1973; Ells & Cleveland, 1935; Wyer, 1980; Bridgeland, 1982) have claimed that inbred faculty members are often discriminated against in their chance for academic and professional advancement. This research question solicited respondents' perceptions on this long-contested issue. Academic advancement is a composite measurement that consists of three questionnaire items: (1) the chance to receive tenure, (2) the length of time it takes to be promoted in the rank, and (3) the likelihood of being hired for an adjunct or non-tenure track position. To answer this research question, hypothesis 9 was generated for statistical analyses.

Null Hypothesis 9: There are no significant differences in the rate of academic advancement for inbred faculty as compared with that of non-inbred faculty as perceived by department chairs with different lengths of service.

Findings: The use of single-classification analysis of variance produced no significant results, and the hypothesis could not be rejected [$F(2, 340) = .12$, $p < .88$]. The means and standard deviations for three groups' ratings of academic advancement are reported in Table 23 and the results of the analysis of variance are reported in Table 24.

Table 21

Means and Standard Deviations for Comparative Measurement of Service Productivity by Department Chairs

LENGTHS OF SERVICE	N ^a	MEAN	STANDARD DEVIATION
Short-term	67	2.761	0.5796
Medium-term	57	2.649	0.7674
Long-term	227	2.700	0.6705

a Missing values were excluded from the statistical analysis.

Table 22

Analysis of Variance of Comparative Measurement of Service Productivity by Lengths of Service

SOURCES OF VARIATIONS	df	MEAN SQUARES	F-VALUE
Major	2	0.1968	0.44
Residual	348	0.4505	

Table 23

Means and Standard Deviations for Comparative Measurement of
Academic Advancement by Department Chairs

LENGTHS OF SERVICE	N ^a	MEAN	STANDARD DEVIATION
Short-term	67	6.388	0.9778
Medium-term	56	6.346	0.8459
Long-term	226	6.435	0.9075

a Missing values were excluded from the statistical analysis.

Table 24

Analysis of Variance of Comparative Measurement of Academic
Advancement by Lengths of Service

SOURCES OF VARIATIONS	df	MEAN SQUARES	F-VALUE
Major	2	0.1059	0.12
Residual	346	0.9005	

Research Question 12: Are there significant differences in the rating of role orientations of inbred faculty as compared with that of non-inbred faculty by department chairs with different lengths of service?

Researchers (Gouldner, 1957; Blau, 1973) have theorized that inbred and non-inbred faculty hold different role orientations. The non-inbred faculty are said to be more cosmopolitan in orientation, to be more loyal to their profession, to be more involved in disciplinary activities, and to place more value on mobility. The inbred faculty, on the contrary, are said to be local in orientation, to give more allegiance to their employing institution, to be more active in collegiate activities, and to give more priority to job security. This research question invited respondents' perceptions of the role orientations of inbred and non-inbred faculty. Two hypotheses were forwarded so the question can be tested statistically.

Null Hypothesis 10: There are no significant differences in the ratings of cosmopolitan orientation of inbred faculty as compared with that of non-inbred faculty by department chairs with different lengths of service.

"Cosmopolitan Orientation" was evaluated through three sub-items in the questionnaire, and they were: (1) professional loyalty, (2) interest in disciplinary activities, and (3) value placed on mobility. To test this hypothesis, one-way analysis of variance was conducted.

Findings: This null hypothesis could not be rejected because the test results did not reach the necessary degree of significance [$F(2, 345) = .10, p < .90$]. Table 25 gives the means and standard deviations for the ratings of cosmopolitan orientation, and Table 26 gives the results of the one-way analysis of variance. It seems reasonable to state that, based on the perceptions of department chairs, inbred faculty and non-inbred faculty do not differ significantly in their

Table 25

Means and Standard Deviations for Comparative Measurement of
Cosmopolitan Orientation by Department Chairs

LENGTHS OF SERVICE	N ^a	MEAN	STANDARD DEVIATION
Short-term	65	6.566	0.9807
Medium-term	56	6.639	1.010
Long-term	227	6.620	0.966

^a Missing values were excluded from the statistical analysis.

Table 26

Analysis of Variance of Comparative Measurement of Cosmopolitan
Orientation by Lengths of Service

SOURCES OF VARIATIONS	df	MEAN SQUARES	F-VALUE
Major	2	0.1020	0.08
Residual	345	1.3206	

cosmopolitan orientation.

Null Hypothesis 11: There are no significant differences in the rating of local orientation of inbred faculty as compared with that of non-inbred faculty by department chairs with different lengths of service.

Similar to the test of cosmopolitan orientation, "Local Orientation" was also measured through responses to three sub-items in the questionnaire. They included: (1) institutional orientation, (2) interest in collegiate activities, and (3) value placed on job security.

Findings: One-way analysis of variance was once again used in testing this hypothesis. The analysis did not generate significant differences [$F(2, 438) = .35$, $p < .70$] that permitted the rejection of Null Hypothesis 11. The means and standard deviations of the scores on local orientation are given in Table 27, and results of analysis of variance are given in Table 28. This result makes it clear that inbred faculty are not necessarily more locally-oriented than non-inbred faculty.

Summary

The present chapter consisted of two parts. The first part was devoted to descriptive analyses of the data and the second part to inferential analyses of the data. The descriptive analyses of the data covered Research Questions (RQ) 1 through 7. Research findings are summarized in the following section.

RQ 1: Results of the descriptive analyses indicate a significant variation in the proportions of inbred faculty members in the 355 departments under study. The extent of inbreeding ranges from 0 to 80 percent, with an average of 4.10 percent. This percentage is below the national institutional average ratio of faculty inbreeding, and caution needs to be taken in interpreting it.

Table 27

Means and Standard Deviations for Comparative Measurement of Local
Orientation by Department Chairs

LENGTHS OF SERVICE	N ^a	MEAN	STANDARD DEVIATION
Short-term	68	5.547	1.157
Medium-term	56	5.549	1.155
Long-term	227	5.599	1.121

^a Missing values were excluded from the statistical analysis.

Table 28

Analysis of Variance of Comparative Measurement of Local
Orientation by Lengths of Service

SOURCES OF VARIATIONS	df	MEAN SQUARES	F-VALUE
Major	2	0.6034	0.35
Residual	348	1.3206	

RQ 2: Regarding departmental policy towards employment of one's own graduates as faculty, almost 54 percent of the departments surveyed had either a formal policy (4.20%) or an informal policy (49.60%) that restricted such a practice, and the rest (46%) of the departments had no policy that encouraged or discouraged faculty inbreeding. Of the 191 departments that had formal or informal policies against the practice of faculty inbreeding, the majority of their chairs perceived faculty inbreeding most likely to affect institutional vitality (n=181) and departmental image (n=131).

RQ 3: Because many departments at the 11 land-grant institutions had prohibitive policies regarding faculty inbreeding, the study found that almost 70 percent of the departments (n=245) surveyed had not offered tenure-track faculty positions to their own graduates in the last five years. The remaining one-third of the departments (n=110) had done so because they believed that (1) the candidate had superior qualifications, and (2) traditional assumptions about inbreeding lacked in empirical support.

This study also found that most departments (n=319), in case of a faculty vacancy, would give employment preference to candidates who were from another institution and who had an appropriate field of specialization.

RQ 4: Results from this study showed that, facing intense competition for top-quality faculty candidates, the majority of department chairs would support selective faculty inbreeding (1) if candidates were highly qualified, (b) if candidates were highly qualified ethnic minorities, and (3) if candidates were highly qualified women. In comparison, much smaller proportions of the department chairs were against selective faculty inbreeding because they believed

"inbreeding is dysfunctional and should never be practiced" under any circumstances.

RQ 5: When asked what would best strengthen the quality of academic programs, most department chairs considered recruiting high-quality students to be the most important measure, followed in importance by boosting faculty morale, recruiting more qualified Ph.D.'s from other institutions, and recruiting qualified women and minority candidates.

RQ 6: Similarly, department chairs considered generating more research funding to be the single most important factor in enhancing the image of a department. Following in order of importance were faculty research productivity, enrolling high-quality students, an expanding academic labor market, and faculty commitment to undergraduate teaching.

RQ 7: Finally, most department chairs advised graduates who aspired to academic careers to look beyond their own institutions for faculty positions, even though they would support selective faculty inbreeding under special circumstances. Graduate students were also encouraged to publish more articles, give presentations at professional conferences, network, and improve their teaching skills.

The inferential analyses of the data were conducted to find answers for Research Questions 8 through 12. Imbedded in these five research questions were 11 research hypotheses that were analyzed through appropriate statistical procedures. The remaining section summarizes results for these research questions and hypotheses.

RQ 8: The extent of faculty inbreeding seemed to vary with the organizational type. The proportions of low- and high-inbreeding groups were

found to be similar among Type I departments--those at the regressing stage, while the proportions differed significantly among Types II and III departments--those at the maintaining and actualizing stages. Further, Type I departments had proportionally a higher extent of inbreeding than both Types II and III departments did, and Type II departments had proportionally higher extent of inbreeding than Type III departments.

With regard to disciplinary types, proportions of low- and high-inbreeding groups were elusive in agriculture/natural resources/environmental sciences, education/family and consumer sciences, and medicine/veterinary medicine. However, the proportions became much more pronounced in business/management, engineering/technology, and in liberal arts/sciences. In addition, results suggested that a relatively low extent of inbreeding existed in business/management, engineering/technology, and liberal arts/sciences, while a relatively high extent of inbreeding existed in agriculture/natural resources/environmental sciences, education/family and consumer sciences, and medicine/veterinary medicine. These findings add to the understanding of how the extent of faculty inbreeding varies with organizational types.

RQ 9: Null Hypotheses 3, 4, and 5 came from Research Question 9, and all three hypothesis were rejected at the .001 level. Results suggested that non-inbred department chairs were less supportive of selective inbreeding than inbred department chairs, when the demand for high-quality candidates was high and when departments were disadvantaged in geographical locations or in financial resources.

RQ 10: Research productivity of inbred faculty as compared to that of non-inbred faculty has been the main focus of research on faculty inbreeding, but

findings have been inconsistent. This present study obtained perhaps the most authoritative perceptions from department chairs on the full-range of faculty scholarship. In areas of research productivity, teaching productivity, and service productivity, test results failed to reach a level significant enough ($p > .05$) to warrant the rejection of null hypotheses 6, 7, and 8. This finding suggested that, as perceived by department chairs with different lengths of service, there were no significant differences in the level of scholarly productivity between inbred and non-inbred faculty.

RQ 11: Contrary to what was often claimed in the literature, results from this study suggested that department chairs, despite the differences in their length of service, perceived that inbred faculty had the same chance for academic advancement as non-inbred faculty ($p > .05$).

RQ 12: Results from the current study did not support the viewpoint that inbred faculty were less cosmopolitan- but more local-oriented than their non-inbred counterparts. Department chairs with different lengths of service perceived that inbred and non-inbred faculty were comparable in their loyalty to the profession versus the institution, in their interest in disciplinary versus collegiate activities, and in their priority given to mobility versus job security.

This chapter has presented a few preliminary findings that are of both statistical and practical significance. It is appropriate at this point to proceed to the last chapter of the dissertation for further discussions of the significance and implications of these findings.

CHAPTER V

SUMMARY AND DISCUSSION

Faculty inbreeding is a unique phenomenon in the community of higher education. It was introduced in the early years of higher education and has remained an issue of much controversy since. Today, discussions regarding its merits and demerits have assumed a degree of urgency and importance as colleges and universities look for qualified candidates to fill a great many anticipated faculty positions in the coming decade. Perhaps more than any time before, institutional administrators need to understand the advantages and shortfalls of recruiting faculty from among their own students.

Inbred faculty comprise a distinct group of the American professoriate. They exhibit career patterns that are often little understood, and their academic life allows for empirical investigations into the questions posed by administrators and policy makers. Empirical research based on their professional experience can generate information that clarifies the relationships between faculty inbreeding and measures of various institutional and individual concerns.

This research was undertaken under this context. Its purpose was not to make simple arguments for or against faculty inbreeding, but rather to contribute to the store of knowledge and to share findings with those who are concerned about the staffing issues of the American professoriate. In this research, the existent understanding of the patterns of faculty inbreeding and reasons for supporting selective inbreeding are expanded.

This chapter will first summarize the research problem and methodology. Then it will present research findings, conclusions, contributions, and

implications. And finally it will discuss research limitations and suggestions for further research.

Summary of the Research

Research interest in faculty inbreeding began with Charles W. Eliot at the turn of the Century, and it has since received intermittent treatment in the scholarly literature. Administrators and researchers in general condemn the practice of recruiting faculty from one's own institution and regard it as taboo. This anti-inbreeding sentiment stems from the assumptions (1) that it stifles the intellectual life and the vitality of educational institutions and hence promotes parochialism, and (2) that inbred faculty are less productive because of their disassociation with the rest of the intellectual world (McNeely, 1932; Revees et al, 1933; Ells & Hargnes, 1935; Wilson, 1942).

However, the validity of these assumptions has been challenged for lack of strong empirical evidence; previous research findings that once served to justify discrediting faculty inbreeding have been criticized for its methodological flaws (Wyer, 1980; Wyer & Conrad, 1984; Dattilo, 1986). Furthermore, the most recent study of faculty inbreeding at land-grant universities by McNeely (1932) was conducted some 60 years ago; consequently, its findings cannot adequately describe the relationship between inbreeding and other educational endeavors at today's land-grant institutions.

Even though the traditional allegations about inbreeding cannot withstand scrutiny, the general sentiment against inbreeding persists in academia. Many higher education administrators find themselves in a dilemma regarding faculty hiring decisions for today and tomorrow. While there is a pressing need to recruit

the brightest and the most qualified candidate to prepare for the anticipated faculty shortages, administrators are hesitant to hire a candidate if he or she happens to be their own graduates. Administrators are fearful that the practice may damage the reputation of their department and institution. Herein lies a philosophical as well as practical problem.

This research seeks to answer the essential research question, "Should there be a legitimate place for selective faculty inbreeding within the system of higher education"? More specifically, the research focuses itself on these areas: (1) investigating the extent of faculty inbreeding within the departments of today's land-grant universities, (2) discovering the prevalent departmental policies concerning faculty inbreeding, (3) identifying the organizational factors that account for the variations in the extent of faculty inbreeding, (4) characterizing the perceptions of department chairs towards selective inbreeding, (5) examining the effect of inbreeding on faculty productivity and other academic measures, (6) delineating factors that strengthen the quality of academic programs and the image of departments, and (7) generating career choice information for graduate students who aspire to academic careers.

To provide the necessary theoretical framework for this research, a comprehensive literature search was conducted. Both historical and recent research on faculty inbreeding was reviewed and integrated. This review included a series of relevant topics such as the current academic labor market conditions and their impact on policies of faculty staffing, an examination of the extent and patterns of faculty inbreeding at US and overseas higher education institutions, liabilities and contributions of faculty inbreeding, the effects of faculty

inbreeding, departmental prestige and inbreeding, and faculty role orientations and inbreeding.

Rather than collecting data from inbred faculty as has been the case in most previous inbreeding studies, this research experimented with utilizing department chairs to collect indirect data on the career patterns and academic endeavors of inbred faculty. This approach allowed access to information which would not be available otherwise. In carrying out the research, an original survey instrument was developed, which was validated by a panel of experts and further pilot-tested to improve its validity and reliability.

The research population included 1,085 department chairs of 11 Land-Grant Universities. The stratified random sampling technique was used to generate a sample of 543 department chairs who represented six academic disciplines in the research population. Two mailings of questionnaires and follow-up phone calls secured 355 usable returned questionnaires, which constituted a response rate of 66.85 percent, with 12 unusable questionnaires removed from the original sample.

The data thus obtained were coded and transcribed into the computer for treatment. The most recent version of the Statistical Package for the Social Sciences was utilized to generate a computer program for statistical analyses and interpretation. When treating the data, composite variables were created in some cases that included several sub-items on the questionnaire to allow the testing of hypotheses.

The frequency distribution along with the mean and standard deviation of the ratings assigned to the dependent variables were used to provide answers to the first seven Research Questions. The Chi-square technique for non-parametric test of homogeneity was used for testing Research Question 8; t-tests for

independent means were used for Research Question 9; and one-way analysis of variance was used for Research Questions 10, 11, and 12. A total of 11 research hypotheses were tested. Hypotheses 1 through 5 were rejected at .05 or higher level of significance, and hypotheses 6 through 11 could not be rejected.

Discussion of the Research Results

Both descriptive and inferential analyses of the data have generated important research results, and these results need to be examined and interpreted in light of the stated purpose of the research. This discussion is important because it gives meaning and relevance to findings of this research.

1. The result from Research Question 1 indicates a low inbreeding ratio among departments of the 11 land-grant universities. Caution needs to be taken in interpreting this result because the average departmental inbreeding ratio should not be confused with that of an institution.

There seems to exist several reasons for the low average inbreeding ratio among departments of land-grant universities. One interpretation is that land-grant institutions have been traditionally less inclined to hire their own graduates as faculty, as was reported by Smythe and Smythe in 1944. Another interpretation could be that department chairs did not include non-tenure-track faculty positions, such as instructors and part-timers, in the calculation of the inbreeding ratio, thus resulting in a low average inbreeding ratio for departments under study. Still further, the result may be due to the fact that certain departments have explicit and implicit policies that restrict the inbreeding practice. In passing, it merits a special note that this is the first study that has generated information regarding departmental inbreeding ratios.

2. The result from Research Question 1 also reveals a significant variation of inbreeding ratio among the departments under study. This variation is explainable by the results for hypotheses 1 and 2. The test result for hypothesis 1 suggests the inbreeding ratio varies with different department types. Specifically, departments that experience reduction in size and scope (Type I) because of financial difficulties have higher proportions of inbred faculty than those that are stable (Type II) and those that are growing in resources and reputation (Type III); similarly, Type II departments have higher proportions of inbred faculty than Type III departments.

This pattern of inbreeding permits the conclusion that the less progressive a department is the more inbreeding takes place. As has been suggested in the literature, regressing departments hire more of their own students because they may have difficulties attracting enough qualified outside candidates or because they are less concerned about the traditional taboo attached to inbreeding (Bridgeland, 1980). In addition, it may be a cost-saving measure for departments to hire from within. In contrast, departments that are relatively stable and progressive are able to recruit more faculty from the outside because they enjoy a higher reputation and better resources. They may have to be more concerned about liabilities for the image of their departments because of faculty inbreeding.

This particular finding is in agreement with the existing literature (Caplow & McGee, 1958; Berelson, 1960; Arimoto, 1978). More significantly, it contributes a new perspective on the relationship between departmental types and the extent of faculty inbreeding. Many previous studies (McNeely, 1932; Hargens & Farr, 1973; Arimoto, 1978; Newman, 1985) have contributed to the understanding of the

patterns of faculty inbreeding, but this is the first study that used the department type as a variable in studying the extent of faculty inbreeding.

Hypothesis 2 investigates the relationship between the extent of inbreeding and disciplinary types. Test results indicate that, in comparison, the disciplines of agriculture/ natural resources/ environmental sciences, education/ family and consumer sciences, medicine/ veterinary medicine have a higher extent of faculty inbreeding than disciplines of engineering/ technology, business/ management, and liberal arts/ sciences. Even though it is difficult to compare this finding with those of other studies because the disciplinary groupings are different, the results are in general agreement with the study of McNeely (1932) and Lumsden et al. (1990). These researchers reported higher inbreeding ratios for disciplines of agriculture, education, and medicine in their studies. This finding also helps to explain the variation of inbreeding ratio among departments of the 11 land-grant universities. Interestingly, the three disciplines that were found to have lower inbreeding ratios are the ones that have been identified as having experienced difficulties in recruiting and hiring qualified faculty candidates (Bowen & Sosa, 1989; El-kawas, 1991; WICHE, 1992). For these reasons, it may be reasonable to speculate that the inbreeding practice may occur more frequently in these disciplines in the near future.

3. With respect to institutional policy towards inbreeding, several researchers (Bok, 1986; Mooney, 1989; Chronister & Turesdell, 1991; WICHE, 1992) indicate that certain institutions have taken steps to grow their own products. However, it is unclear in the literature how institutions and departments differ in their policy regarding faculty inbreeding. This research has provided information to fill the gap. Results indicate that nearly half of the departments surveyed have

no policies regarding inbreeding practice. The reasons why these departments remain neutral on the issue may be many. One likely explanation is that these departments are sensitive to governmental laws regarding affirmative action and equal employment opportunity. It is also possible that these departments maintain an open policy that permits them to be flexible in faculty recruitment. In face of possible deficits of qualified faculty, higher education institutions will definitely fare better to adopt a policy that allows them to make hiring decisions on an individual basis, particularly when it comes to hiring qualified minority and women candidates. An across-the-board policy that prohibits hiring one's own graduates may be illegal and self-limiting as well.

Nevertheless, data also show that another 50 percent of the departments have either formal or informal prohibitive policies against inbreeding. This result leads to the conclusion that anti-inbreeding attitudes remain strong in land-grant institutions of higher education. The reasons why this anti-inbreeding stance exists have been found to be the same as those reported by Blau (1973) and Bridgeland (1980) in their studies--department chairs believe that inbreeding negatively affects the vitality of their institution and the image of their department. It should be pointed out here that this belief has been challenged by many researchers and counter evidence has proved otherwise. For instance, Wells et al. (1979), Wyer and Conrad (1984), and Dattilo (1986) have found that the extent of inbreeding does not affect institutional prestige; Berelson (1960), Messengale and Sage, (1982), and Im (1990) have reported that inbred faculty had positive influences on the quality and reputation of their organizations.

4. Department faculty staffing policies have a direct impact on faculty hiring decisions. Because many departments adopted an anti-inbreeding policy,

only one-third of the departments reported that they had offered tenure-track positions to their own graduates in the last five years. The other two-thirds did not hire any of their graduates. In the same vein, department chairs also indicated a clear preference for graduates of another institution and with the necessary area of specialization when future faculty positions become vacant. While these findings are within general expectations, they testify to the reluctance of administrators to hire their own graduates unless they have superior qualifications. In other words, a home-trained candidate has to have impeccable credentials and exemplary accomplishments before he or she is considered for a faculty position by his or her own department.

Of the 110 (30%) departments that hired one of their own graduates in the last five years, 73 (66%) departments cited "traditional assumptions about the inbreeding practice lacked empirical support" as one of the justifications for the practice. This result may have a limited base of support, but it shows that there are administrators who question the validity of traditional biases against inbreeding. It certainly reveals the need for more investigations into the issue.

5. The literature review in Chapter II reveals that faculty inbreeding has always existed at higher education institutions in the midst of contradictory claims regarding its merits and demerits. Opponents and proponents disagree on many aspects of the inbreeding practice, but they seem to agree that excessive inbreeding is harmful to an academic institution (Eliot, 1908; McNeely, 1932; Wilson, 1942; McGee, 1960; Arimoto, 1978; Wells et al., 1979; Bridgeland, 1980; Wyer & Conrad, 1984; Lumsden et al., 1990). For this reason, the major question that was posed in this research was, "Should selective inbreeding have a legitimate place in the system of higher education"?

Results from data analyses seem to lead to a positive answer, that is, selective inbreeding under special circumstances should have a rightful place in the system of higher education. This conclusion is based on two supportive foundations: First, responses to Research Questions (a), (b) and (c) from 355 department chairs were overwhelmingly consistent that they would support selective faculty inbreeding when significant shortages of top-quality faculty were to be expected and when candidates were qualified minority or women candidates. It is important to note that many of these respondents who expressed support for selective inbreeding may be from departments that had formal or informal policies against the general practice of faculty inbreeding. This result speaks for the importance of adopting a flexible staffing policy that responds to changes in the academic labor market and to the need of increasing the representation of minority and women faculty in higher education.

Second, the primary objection to faculty inbreeding seems to originate from the assumption that inbred faculty are less productive than non-inbred scholars because the inbreeding practice supposedly "stunts" faculty's intellectual curiosity and lessens their motivation to achieve (McNeely, 1932; Revees et al., 1933; Wilson, 1942; Ells & Cleveland, 1935; Blau, 1973). However, many studies that were specifically designed to compare the research productivity between the inbred and non-inbred faculty have refuted this assumption (McGee, 1960; Clark & Larson, 1972; Hargens & Farr, 1973; Wells, et al., 1979; Wyer, 1980; Wyer & Conrad, 1984; Dattilo, 1986). These researchers have consistently reported that inbred faculty are no less productive than non-inbred faculty. In few cases, researchers have found inbred faculty to be more productive than their non-inbred counterparts (McGee, 1960; Wyer, 1982; Wyer & Conrad, 1984). Results from this study have provided

new evidence regarding the scholarly productivity between the two groups of faculty.

Research hypotheses 6, 7, and 8 respectively tested the relationship between department chairs' length of service and their ratings of research productivity, teaching productivity, and service productivity exhibited by inbred versus non-inbred faculty. Results from one-way analysis of variance failed to reject the null hypotheses in all three aspects of scholarly productivity, thus indicating that, as perceived by department chairs, inbred faculty were just as productive as non-inbred faculty. This finding serves several purposes: (1) It further refutes the traditional argument that inbreeding is dysfunctional because inbred faculty produce less than non-inbred faculty; (2) It lends a strong empirical justification for selective faculty inbreeding in higher education institutions. As Conrad and Wyer (1982) have pointed out, "A wise policy of selective inbreeding can be a good policy in academe" (p. 48); and (3) It challenges the legitimacy of institutional and department policies--formal or informal-- that discriminate against inbred faculty. Since academic nativity is not a reliable indicator of one's productive potential, higher education administrators should abandon it as a criterion for faculty selection and promotion.

6. All departments are concerned about the quality of their academic programs. If faculty inbreeding is believed to affect the vitality of an institution, it would be logical to expect department chairs to give the highest ratings of importance to "eliminating faculty inbreeding practice." Yet, results from this research did not support this finding. Instead, "eliminating faculty inbreeding" was given the least rating of importance. Respondents gave high ratings to "boosting faculty morale, "more qualified Ph.D.'s from other institutions," and

"recruiting more women and minority faculty members." These responses support the notion that academic excellence is achieved through recruiting high-quality students and a diversity of qualified faculty rather than instituting a total ban on one's own graduates.

Similarly, results indicate that the image of a department depends on more research funding, faculty research productivity, high-quality students, an improved academic labor market, and commitment to undergraduate teaching. Faculty inbreeding was not considered helpful to department image, but as an option it had the least level of support. Ironically department chairs are shown to be more concerned about the amount of research dollars their department generates than about faculty commitment to undergraduate teaching. Its implications are beyond the purpose of this dissertation, yet they need to be considered by higher education administrators.

7. One of the objectives of this research is to provide career choice information for students who desire an academic career. Results reveal that department chairs consistently advise students to look to institutions other than their own for faculty positions. Students are also advised to publish more, give more presentations, build networks, and improve teaching skills. While this advice is well-thought and well-intentioned, it begs the question, "Why is it unwise for a graduate to apply for a faculty position in the home department if he or she is well qualified"? It is likely that department chairs' advice was based on their gut feelings rather than on any logical reasons. This result reinforces the need to further assess the wide-spread impressionistic belief about the ills of faculty inbreeding.

8. Test results from hypotheses 3, 4, and 5 indicate a significant difference in the acceptance of selective faculty inbreeding by respondents who are inbred and respondents who are non-inbred. In all three circumstances (when the demand for high-quality candidates is high, when a department is geographically disadvantaged, and when the department is financially disadvantaged) the non-inbred department chairs indicated less support for selective inbreeding than the inbred department chairs. This finding is not contradictory to the results for Research Questions 4 (a), (b), and (c); the differences in respondents' acceptance of selective inbreeding may be attributable to differences in their professional background. Non-inbred department chairs seem to have attached more importance to change and mobility while inbred department chairs seem to have given more emphasis to continuity and tradition because of their different career experiences.

9. Regarding the chance for academic advancement for inbred versus non-inbred faculty, this research has provided a finding that challenges the literature. Studies by Hargens & Farr (1973), Ells & Cleveland (1935), Wyer (1980), and Bridgeland (1982) suggest that inbred faculty generally experience a slower rate of academic advancement because of overt and covert discrimination. Findings from this research, however, lead to a different conclusion: Inbred and non-inbred faculty have an equal chance for academic advancement at land-grant universities. It appears that land-grant institutions afford inbred and non-inbred faculty the same chance for promotion and professional development, though these institutions are more restrictive in placing their own graduates on faculty. This observation suggests a possible theoretical explanation in that inbred faculty at land-grant universities and inbred faculty at other institutions may experience

different career opportunities. The validity of this explanation needs to be further tested in a different study.

10. Results from this study also challenged Gouldner's (1957) and Blau's (1973) theories relative to the role orientations of inbred faculty. Instead of finding inbred faculty to be less cosmopolitan-oriented but more local-oriented than non-inbred faculty as the researchers theorized, results of this research support a different conclusion--that is, inbred faculty exhibit the same role orientations as non-inbred faculty. One plausible interpretation is that the modern means of communication and networking have allowed faculty members to be cosmopolitan in orientation while remaining inbred. In other words, thanks to modern technology, inbred faculty can network, exchange information, and participate in inter-collegiate activities without having to be employed in a different institution. The conditions that used to limit faculty's professional activities have changed. The other explanation is that faculty's role orientations may be affected by factors such as faculty's individual interest and motivation rather than by their academic nativity. It follows that one's academic nativity has no direct relationship with one's role orientations. This calls into question Gouldner's and Blau's original hypotheses. Future research is needed to verify the relationship between faculty role orientations and their academic nativity.

Research Contributions

Building upon previous research work on faculty inbreeding, this research has made several important contributions that are worth discussion.

1. Unlike previous research of faculty inbreeding that gathers information directly from faculty members, this research utilized department chairs as the

source of information. Despite the limitations, this approach suggests a new method of investigation of faculty inbreeding. It also gives access to information regarding faculty's teaching and service productivity that is normally difficult to collect using a different method.

2. Most previous research on faculty productivity concentrated on the research productivity. Measurements are mainly based on the number of articles and number of books published. Based on the definition of scholarly productivity suggested by Boyer (1991), this research added teaching and service productivity to the traditional measure of faculty productivity. This addition is important in that it gives due recognition to the other aspects of scholarly productivity that are frequently regarded as less important.

3. While previous studies have examined the extent of faculty inbreeding on an institutional level, this is the first research that has provided information concerning the extent of inbreeding among the departments of land-grant universities.

4. It should be noted that this study has provided the most updated information on departmental policies regarding faculty inbreeding among the 11 land-grant universities. This information should be useful to higher education administrators and government policy-makers who are concerned about the issues of faculty staffing.

5. Similarly, while there exists information on the patterns of faculty inbreeding as it relates to academic disciplines, this is also the first research that has used department types to explain variations in the extent of inbreeding. This information certainly adds to the understanding of the relationship between the extent of inbreeding and organizational types.

6. Finally, this research proposes that selective inbreeding be given a legitimate place in the system of higher education. Using a combination of descriptive and inferential analyses of the data, this research has provided empirical evidence and rationales for such a practice.

Implications and Recommendations

Although research findings presented in this dissertation have not conclusively resolved all the research questions regarding faculty inbreeding, they have important implications for decisions and policies. These implications can bridge research findings and academic practices and therefore should be carefully considered.

This research has shown that land-grant institutions in general have overt and covert policies against faculty inbreeding at both the departmental and institutional level. These policies have translated and will continue to translate into faculty recruitment decisions unfavorable to inbred graduates. Those institutions that have turned away qualified candidates because they are inbred should know whether their decisions constitute instances of discrimination. More importantly, when higher education institutions are preparing for possible faculty shortages, administrators need to ask, "Are traditional views about inbreeding still valid in the face of accumulated evidence"? "Can institutions afford to turn away their own graduates, especially if they are qualified minority or women candidates"? "What signals should institutions send to faculty aspirants"?

American higher education is confronted with many uncertainties. If the American professoriate hopes to strengthen its quality and vitality, and if

institutions hope to survive and renew themselves in the new century, administrators and policy makers must be willing to tackle these crucial questions in a straightforward manner. They must consider the short- and long-term implications of decisions that are made or not made today.

Inbreeding has traditionally been equated with low productivity and negative effects on the departmental reputation. Results of this and many other studies (Clark & Larson, 1972; Hargens & Farr, 1973; Wells et. al, 1979; Wyer, 1980; Wyer & Conrad, 1984; Dattilo, 1986) have provided compelling evidence that counterclaims unfavorable allegations against inbreeding. Researchers and institutional administrators should re-examine traditional assumptions and their influences on hiring practices. It is time that higher education institutions used a natural selection process that emphasizes candidates' desirable qualities rather than one that emphasizes candidates' institutional origin.

As findings of this research suggest, the extent of inbreeding among departments of land-grant institutions varies according to departmental and disciplinary types. Those departments and disciplines that tend to have a higher extent of inbreeding may have extenuating circumstances for doing so, but administrators need to become aware of this tendency and guard against excessive cases of inbreeding in a department or discipline. Institutions of higher education must recruit and retain qualified faculty candidates from diverse academic and institutional backgrounds.

This research has generated career choice information that has important implications for faculty aspirants and faculty advisors. Since graduates have been advised against considering faculty positions at the graduating institution, they

probably need to enhance their marketability by engaging in scholarly and social activities outside their own institutions. For those who are determined to seek faculty appointments at their alma mater, they may have to achieve the goal via an indirect route--that is, seeking a home appointment after they have been employed by another institution of comparable status. Faculty advisors should encourage talented students, especially women and minority students, to aspire to an academic career. They can help students prepare for such a career in several ways. For instance, faculty advisors can engage students in their research projects, include students in their professional network, and introduce students to outside mentors. To identify potential faculty aspirants and guide them during their graduate student career is perhaps the best and most important strategy to ensure a constant supply of qualified faculty for higher education.

Finally, the finding that inbred and non-inbred faculty do not differ significantly in their role orientations also has implications for higher education administrators. Department chairs and deans need to recognize that faculty preference for teaching versus research, institutional versus disciplinary activities, job security versus mobility is related not so much to their institutional origin as to their individual interest and talent. To assume that inbred faculty make better teachers than researchers or vice versa for non-inbred faculty is wasteful; to think that inbred faculty are parochial because they lack exposure to disciplinary activities outside the institution is erroneous. When making academic work assignments and performance evaluations, administrators need to consider academic training and accomplishments of each faculty member, rather than to assume their scholarly preference and qualifications based on institutional origin.

Research Limitations

Although this research has answered all the research questions it posed in the beginning, its findings cannot be better than the methods used to collect data or the data used as input. In reviewing the design and process by which the research was carried out, several methodological limitations become obvious.

One of the research limitations relates to the source of the data. While using department chairs to gather information has several advantages, a portion of the data thus collected are indirect perceptions offered by department chairs. While there is no reason to believe that their perceptions are more unreliable than information collected from other measurements of attitudes, special caution must be taken in interpreting the results and in making generalizations.

Another limitation of the research involves the number of subjects. With only 49 department chairs who are inbred, test results may have been influenced by the small size for this particular group. Similarly, the size of the disciplinary strata was uneven, with the business/management stratum having only 12 people. While the original data may not be controllable, the stratification may be pre-determined to avoid the problem of small stratum size.

A final limitation results from an oversight. The term "selective inbreeding" was not defined in the survey instrument. Although respondents who returned the questionnaires showed a correct understanding of the term from the context, it may have caused several returned questionnaires to be unusable.

Suggestions for Further Research

This research has rendered important findings regarding the relationship between faculty inbreeding and several institutional and individual variables.

However, these findings not only are preliminary but also result in different questions about the complex phenomenon of faculty inbreeding. Further research is needed to confirm and extend conclusions from this research so that more reliable and refined information can be generated to support the formation of faculty staffing policies. What follows represents this researcher's suggestions for future research:

1. Data from this research reveal that many institutions have explicit and implicit policies that prohibit the employment of faculty inbreeding. The legality of these policies has been questioned (Sadler, 1974) and challenged (Broad, 1980), but their implications are still unclear. Research is needed to expand the current understanding in the area and to answer questions such as "Are anti-inbreeding policies, particularly unwritten and implicit policies, lawful"? "Is it compatible with the spirit of affirmative action when a qualified minority candidate is denied a faculty position because he or she happens to be a home graduate"?

2. This investigation involved Iowa State University's Peer Eleven Land-Grant Universities. While the similarities in institutional size and scope of academic programs ensure the uniformity and consistency of the data and research results, generalizability may be limited for lack of breadth and diversity in the database. It should greatly broaden the understanding if more or, when possible, all land-grant institutions in the country are involved in a similar study. Obviously a large scale investigation requires more resources and effort, but results thus generated should be well worth the cost.

3. Data collected for this research are limited to the perceptions of department chairs from land-grant universities. There is a need for research that invites opinions of department chairs from land-grant and other higher education

institutions. A study conducted with this design will make it possible to compare and contrast the career patterns and academic achievement opportunities of inbred faculty under different institutional contexts.

4. Results from this research indicate that inbred and non-inbred faculty do not necessarily formulate different role orientations as suggested by Gouldner (1954) and Blau (1973). There may be two reasons for this finding: The first explanation is that there exists a flaw with the design of this research; the other is that Gouldner's and Blau's theories cannot explain the development of role orientations of today's faculty because circumstances have changed. Whichever explanation may be valid, there is a clear need for further investigations into the formation and development of faculty role orientations, taking into consideration the effect of modern technology on the patterns of inter-disciplinary and inter-collegiate interactions of faculty members.

5. One of the objective of this research is to provide evidence that supports selective faculty inbreeding. This research has taken the first step in generating tentative justifications for practicing selective faculty inbreeding. However, a crucial question that needs to be asked is, "What are the circumstances and criteria that merit selective inbreeding"? Also, "To what extent should selective inbreeding be allowed before it becomes excessive"? In other words, "Is there an ideal ratio between inbred and non-inbred faculty that can or should be maintained within a department, an institution, and the community of higher education?" These questions, if prudent to ask, can only be answered by future research.

6. In the final analysis, the current literature on faculty inbreeding should greatly benefit from a longitudinal research that tracks career-long scholarly

productivity and contributions of inbred and non-inbred faculty. Findings from this type of research design and database can immensely enhance the knowledge of the inbreeding phenomenon and clarify many unresolved questions and myths about inbreeding.

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APPENDIX A. SURVEY INSTRUMENT

*To Prepare for
Tomorrow's Higher Education*

**A Study of Faculty
Inbreeding at Eleven Major
Land Grant Universities**

by

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Dear Colleague:

In light of significant faculty shortages predicted for the next 25 years, college and university administrators across the country are contemplating a variety of creative ways to attract high-quality faculty candidates. Many institutions have proposed to "grow their own product" or to hire their own graduates--a form of faculty inbreeding. Such a practice, however, raises a critical question, "What place should faculty inbreeding have in higher education?" The attached survey is concerned with perceptions of faculty inbreeding by department chairpersons at eleven major land grant universities. The results of this study will help inform the career choices of faculty aspirants and policy discussions of faculty staffing within the higher education community.

This survey will specifically focus on the nature and functions of faculty inbreeding. We particularly desire your response because your experience as a department chairperson places you in a unique position to appraise the full range of scholarship of faculty members, and assess the merits and demerits of faculty inbreeding. You are invited to provide comments on the functions of faculty inbreeding at the end of the survey.

We recognize your busy schedule as the chief department executive officer. The enclosed instrument has been tested with a sampling of university faculty, and we have revised it to obtain the desired data while requiring a minimum amount of your time. It should take an average of 15 minutes to complete this survey.

Your participation in this study is voluntary, but it will be greatly appreciated if you will complete the survey by **June 17, 1992**. After completing this survey, simply return it in the pre-stamped envelope. Your response will be held confidential since we will only analyze and share aggregated data. In addition, we have coded the survey instruments in numbers. The code number will be removed upon receiving the survey instrument and before your responses are tabulated. We will be glad to answer any questions you may have about the survey or the study. We will be also pleased to furnish you with a summary of the findings if you so desire.

Thank you for your response and assistance.

Sincerely,

Dr. Larry H. Ebbers
Professor and Chair
Department of Professional Studies
Iowa State University

Shouan Pan
Graduate Student
Department of Professional Studies
Iowa State University

Survey

Definition:

Faculty inbreeding: The general practice of recruiting faculty members from graduates of one's own institution.

Inbred faculty: Faculty members who obtained their terminal degrees from the institution currently employing them. Those who graduated from and are currently teaching in the same institution but have taught at another institution or have worked in industry since receiving their terminal degrees are not considered inbred faculty in this study.

Part I

In this part, we are interested in knowing your viewpoint on the general functions of faculty inbreeding.

1. Does your department have a formal or informal policy restricting the employment of your own graduates? *(Please check the appropriate response)*

_____ Yes, Formal _____ Yes, Informal _____ No policy

[If yes] Such a policy is in effect because inbreeding may affect *(Please check all that apply)*

	Agree		Neutral		Disagree
1) Departmental image	1	2	3	4	5
2) Institutional vitality	1	2	3	4	5
3) Academic advancement of faculty member .	1	2	3	4	5
4) Research productivity	1	2	3	4	5

2. Has your department offered any tenure-track appointments to graduates of your own department during the last five years? *(Please check the appropriate response)*

_____ Yes _____ No (If no, skip to question number 3)

[If yes] Your department hired a graduate of your own because *(Please circle all that apply)*

	Agree		Neutral		Disagree
1) The candidate was of superior quality	1	2	3	4	5
2) The traditional negative assumptions about inbreeding lack in empirical support .	1	2	3	4	5
3) Inbreeding provides a cost-saving measure	1	2	3	4	5
4) Inbreeding fosters faculty loyal to the department and the institution	1	2	3	4	5
5) Outside applicants turned down an offer	1	2	3	4	5

3. Given the possible severe competition for a limited number of high-quality faculty candidates, would your department consider employing your own graduates as faculty? *(Please check the appropriate response)*

_____ Yes. We are supportive of recruiting faculty from our own graduates who are highly qualified.

_____ No. We do not support the employment of our own graduates regardless of their qualifications.

4. Would you support selective inbreeding if the candidate is of high quality and is from an ethnic minority group? *(Please check the appropriate response)*

_____ Yes. Increasing the representation of minority faculty is very important.

_____ No. Inbreeding is dysfunctional and should never be practiced.

5. Would you support selective inbreeding if the candidate is of high quality and is a woman? *(Please check the appropriate response)*

_____ Yes. Increasing the percentage of women faculty is very important.

_____ No. Inbreeding is dysfunctional and should never be practiced.

(For each item in the following, please circle one number which most reflects your opinion)

- | | <u>Agree</u> | <u>Neutral</u> | <u>Disagree</u> |
|--|--------------|----------------|-----------------|
| 6. Selective inbreeding is appropriate for disciplines in which the demand for high-quality faculty is high. | 1 | 2 | 3 4 5 |
| 7. Selective inbreeding should be supported in departments which are disadvantaged in their geographic locations | 1 | 2 | 3 4 5 |
| 8. Selective inbreeding should be supported in departments which are disadvantaged in their financial resources | 1 | 2 | 3 4 5 |
| 9. Please rate the following candidates (whose qualifications are almost identical) for a faculty vacancy in your department? <i>(Please circle only one response)</i> | | | |

A graduate of your own department

A graduate from another institution

A graduate with an appropriate/needed area of specialization

No preference

Part II

In his recent book *Scholarship Reconsidered* (1991), Ernest Boyer, President of the Carnegie Foundation for the Advancement of Teaching, underscores the urgent need to define and reward the work of faculty in ways that truly reflect their full range of scholarship. The traditional view—which considers a scholar to be a researcher primarily—is too restricted and outdated. To evaluate the scholarly productivity of the professoriate, equal recognition must be given not only to research productivity but also to teaching productivity and service productivity. In this survey, we will adopt Boyer's integrated view of scholarship.

Definition:

1. **Research productivity:** Broad range of scholarly work that includes specialized and popular writing in the form of journal articles, books, monographs, textbooks, etc.
2. **Teaching productivity:** Faculty commitment to teaching excellence exhibited through their expert command over the subject matter and their ability to transmit, transform, and extend integrated knowledge to students by way of carefully planned and continuously revised pedagogical procedures.
3. **Service productivity:** Faculty commitment to institutional service, professional service, and public service. Service activities are related to faculty's special academic field and can be carried out through serving on committees, advising students, outside consultation, technical assistance, policy analysis, etc.
4. **Professional achievement:** Promotion in rank, tenure, salary, etc.
5. **Professional loyalty:** Faculty members who are primarily oriented towards colleagues and research activities in the disciplines outside the institution have professional loyalty.
6. **Institutional loyalty:** Faculty members who are mostly committed to colleagues and teaching activities within the institution have institutional loyalty.

In this part, we are interested in knowing your perceptions of how inbred faculty perform as compared to their noninbred colleagues on specific areas of scholarship. If there are no inbred faculty members in your department, please give your general evaluations of the productivity of inbred faculty.

[For questions 10-25, please indicate to what extent inbred faculty possess the following characteristics when compared with noninbred faculty ?]

	<u>Greater</u>	<u>Equal</u>	<u>Less</u>		
10. Interest in classroom teaching	1	2	3	4	5
11. Teaching load	1	2	3	4	5
12. Teaching effectiveness	1	2	3	4	5
13. Interest in research	1	2	3	4	5
14. Research productivity over the past five years	1	2	3	4	5
15. The level of research funding generated over the past five years	1	2	3	4	5
16. Service productivity	1	2	3	4	5
17. The chance to receive tenure (with seniority being equal)	1	2	3	4	5
18. The length of time it takes to be promoted in the ranks..	1	2	3	4	5
19. The likelihood of being hired for adjunct or non-tenure track position	1	2	3	4	5
20. Professional loyalty	1	2	3	4	5
21. Institutional loyalty	1	2	3	4	5
22. Interest in disciplinary activities	1	2	3	4	5
23. Interest in collegiate activities	1	2	3	4	5
24. Value placed on job security	1	2	3	4	5
25. Value placed on mobility	1	2	3	4	5

26. In your opinion, what factors would strengthen the quality of academic programs in your department? *(Please circle all that apply)*

	Very Important		Neutral		Not Important
1) Attracting more qualified Ph.D.'s from other institutions	1	2	3	4	5
2) Boosting faculty morale	1	2	3	4	5
3) Enrolling high-quality students	1	2	3	4	5
5) Eliminating inbreeding practice	1	2	3	4	5
6) Recruiting more ethnic minority members.....	1	2	3	4	5
7) Recruiting more women faculty members.....	1	2	3	4	5

27. What factors can enhance the image of your department?

	Very Important		Neutral		Not Important
1) Employment of graduates by own university	1	2	3	4	5
2) More research funding	1	2	3	4	5
3) High-quality students	1	2	3	4	5
4) Expanding job placement market for graduates.....	1	2	3	4	5
5) Faculty research productivity	1	2	3	4	5
6) Faculty commitment to undergraduate teaching	1	2	3	4	5

28. How can new Ph.D.'s prepare for an academic career?

	Very Important		Neutral		Not Important
1) Publishing articles before graduation	1	2	3	4	5
2) Presenting at professional conferences	1	2	3	4	5
3) Improving teaching skills	1	2	3	4	5
4) Establishing professional networks in one's field	1	2	3	4	5
5) Looking beyond one's Alma Mater for faculty positions	1	2	3	4	5

29. Please list three significant dangers/liabilities of faculty inbreeding:

Its effects on individual faculty members:

- 1) _____
- 2) _____
- 3) _____

Its impact on the reputation of a department:

- 1) _____
- 2) _____
- 3) _____

30. Please list three significant merits/utilities of faculty inbreeding:

Its effects on individual faculty members:

- 1) _____
- 2) _____
- 3) _____

Its impact on the reputation of a department:

- 1) _____
- 2) _____
- 3) _____

Part III

In this part, we are interested in obtaining important background information.

31. You have served as the Head of your Department for _____ years.

32. Given the definition on page one, are you an inbred faculty member of your institution?

_____ Yes _____ No

33. The name of your department is _____

34. Your department is administered in the College/School of _____

35. The name of your University is _____

36. The percentage of inbred faculty members in your department is _____ %.

37. How would you characterize the development stage of your department?

_____ Regressing Stage (Reduction in size and scope due to budget cuts)

_____ Maintaining/Stable Stage (Stability in program size and scope)

_____ Actualization/Growing Stage (Growth in size and scope and aiming to achieve the ultimate level of individual performance and departmental excellence)

Please use the following space to make any comments you believe would add to the understanding of the nature and functions of faculty inbreeding within American higher education.

We greatly appreciate you taking the time to complete this survey. Postage for the survey is prepaid. Please tape or staple it before mailing. Thank you once again for your generous assistance.

[] Please check here if you desire a copy of our research findings.

APPENDIX B. CONTACT LETTER TO ACADEMIC PROVOSTS
AT ELEVEN LAND-GRANT UNIVERSITIES



IOWA STATE UNIVERSITY

Telephone: (515) 294-5144

April 1, 1992

Dr. Jack R. Cole
Senior Vice-President for Academic Affairs
University of Arizona
Tucson, AZ 85721

Dear Dr. Cole:

In light of significant faculty shortages predicted for the next decade, college and university administrators across the country are contemplating a variety of creative ways to attract high-quality faculty candidates. Many institutions have proposed to "grow their own product" or to hire their own graduates—a form of faculty inbreeding. In an attempt to better understand the phenomenon, we are conducting a research study about the perceptions of faculty inbreeding by department executive officers from our comparison group of Eleven Land Grant Universities, of which your University is one. We are writing to solicit some information.

With your permission, may your office please provide the following information?

- A list of complete names and addresses of all current department chairpersons at your University (If phone numbers are available, we would appreciate having them, too).
- An indication of the percentage of faculty members who graduated from and are currently on faculties at your University.
- An indication whether your University has a formal or informal institutional policy regarding recruiting faculty from your own graduates. (If you have a written policy, we would appreciate receiving a copy.).

We thank you in advance for your generous assistance in supplying the information. Your support is crucial to launch this study. We are optimistic that, with the kind support from concerned academic administrators like yourself, this study will generate information that helps inform policy discussions and decision-making regarding faculty recruitment among land grant universities and within higher education.

If you have any questions about this letter or the purpose of this study, please contact Mr. Shouan Pan at (515) 294-6592. Thank you once again for your assistance.

Sincerely,

Dr. Larry H. Ebbers
Professor & Chair
Department of Professional Studies
Iowa State University

Shouan Pan
Graduate Student
Department of Professional Studies
Iowa State University